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Vol. 104

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No. 19

In This Issue

Possibilities of the Modern Steam Locomotive . . Page 796

An abstract of a paper by W. C. Dickerman, President of the American Locomotive Co., telling of the developments which are keeping steam locomotives abreast of the changing requirements of passenger and freight-train movements.

Station Facilities Must Keep Pace With Modernized Train Service 803

A discussion of the report prepared by the committee on yards and terminals of the A. R. E. A. which points out the factors having an influence on station facilities and the improvements being made.

Rail-Highway Regulation Trends 807

An article dealing with specific decisions regarding co-ordination of services, which show the attitude of the various commissions on the subject.

EDITORIAL

"Purchasing Power" Not Aided by High Wage Rates. 793

GENERAL ARTICLES

Possibilities of the Modern Steam Locomotive, by W. C. Dickerman. 796
1937 Rail Output at Seven-Year Peak. 801
Bills for Equipment and Employment Loans. 802
Station Facilities Must Keep Pace With Modernized Train Service. 803
Announce 15 Per Cent Wage Cut. 805
Rail-Highway Regulation Trends. 807
Railway Buying—First Quarter. 808

A COMMUNICATION 809

NEWS 810

REVENUES AND EXPENSES OF RAILWAYS 824

FREIGHT OPERATING STATISTICS 829

The *Railway Age* is indexed by the *Industrial Arts Index* and also by the
Engineering Index Service

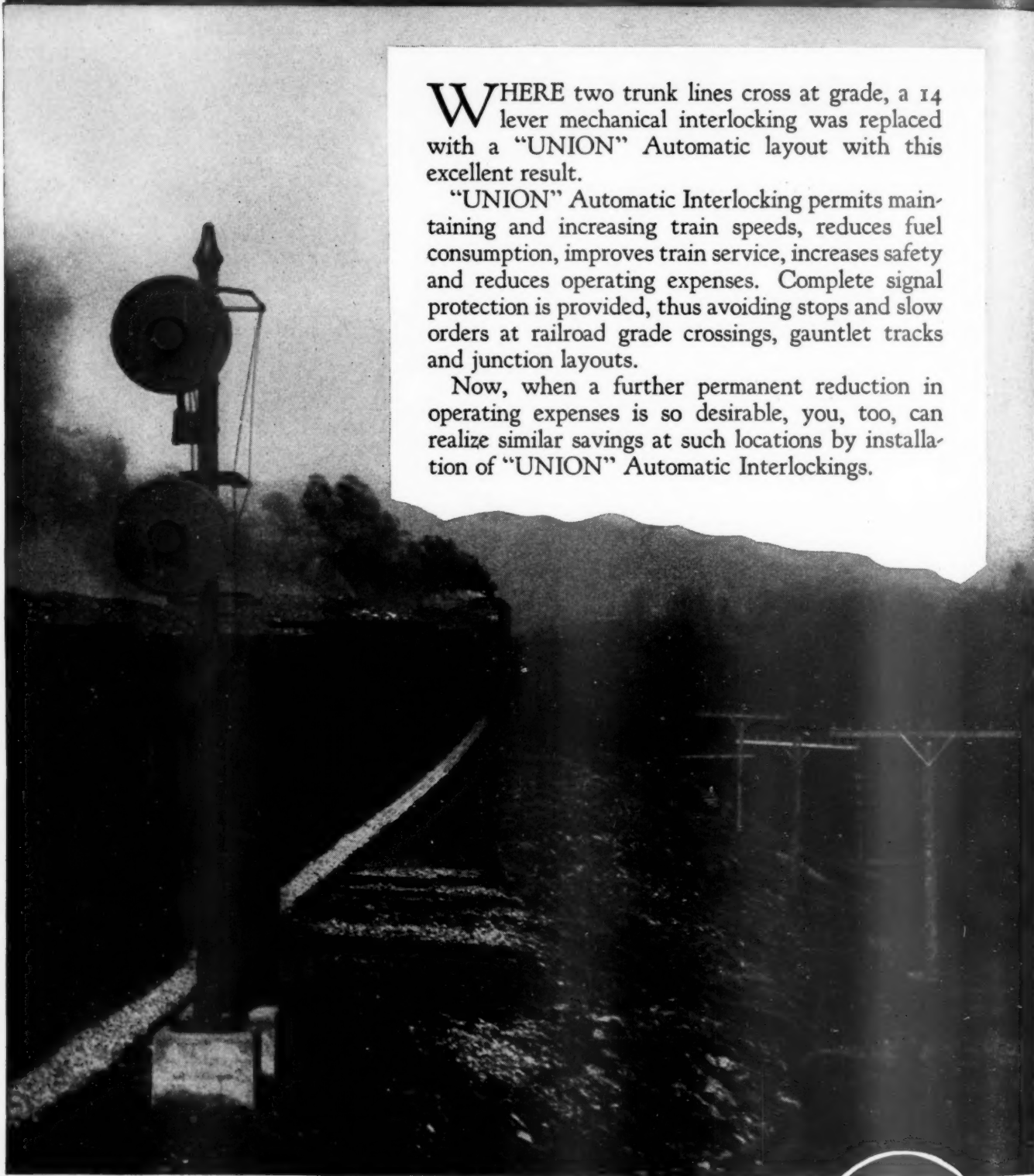
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"Purchasing Power" Not Aided by High Wage Rates

Although we do not share the bitter indignation of D. B. Robertson and George M. Harrison at the suggestion of Commissioner Eastman that the federal government investigate railway wages and working conditions, we do at least understand their perturbation. The railway unions—and in particular those in the train and engine service—are clearly convinced that they enjoy a strategic advantage from the general public ignorance of their wages and working rules; and they fear what would happen if that ignorance were dispelled. Still, we believe it to be demonstrable that public ignorance of these wages and working rules is no more in the interest of the great body of railway employees than are present wages and working conditions themselves.

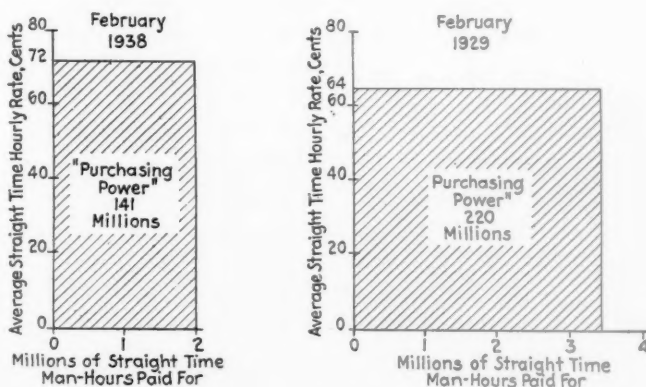
"Purchasing Power" Has Two Dimensions

Mr. Harrison was particularly indignant at the railways' proposal to reduce wages by 15 per cent. He said:

Railroad labor does not propose to permit the railroads to sabotage the President's recovery program. Railroad labor will resist every effort to further dry up the already too low purchasing power.

What Mr. Harrison neglects to consider is that high wage rates have nothing whatever to do with "purchasing power." "Purchasing power," insofar as it is expressed in money wages, has two dimensions—the wage rate *and* the number of men employed. In February, 1929, the average hourly straight time compensation of railway employees paid by the hour was 64 cents. In February of this year, their average hourly compensation was 72 cents—an increase of 12½ per cent. According to Mr. Harrison's notion of the effect of wages on "purchasing power," we should expect the "purchasing power" of railway employees in February this year to have been materially greater than in February, 1929. As a matter of fact, however, the total amount paid out in wages by the railroads in February, 1929, was 220 millions and in February, this year, only 141 millions—a decline of 36 per cent. Total "purchasing power" of railway employees does not, therefore, increase with higher wage rates, and it is quite possible for such "purchasing power" greatly to decrease when wages are increased.

We have made a graphic comparison of railway wage rates and total compensation to employees in an accompanying chart—and in presenting it we wish to emphasize that it is our desire, as much as it is that of any union leader, to see the actual "purchasing power" of railway employees (i. e., their total wages, shown in the shaded area on the accompanying chart) increased as much as possible. Our only difference with Mr. Harrison on this question is that he seems to think he can enlarge the shaded area by simply pushing up the



Purchasing Power Has Two Dimensions—the Wage Rate (Which Is the Only One the Labor Leaders Ever Mention) and the Man-Hours Worked; Too High Wage Rates May Reduce Purchasing Power, Instead of Increasing It

vertical dimension (wage rates), regardless of how much the horizontal dimension may diminish. On the other hand, we submit that a child should be able to understand from the accompanying chart that "purchasing power" of employees has two dimensions—not alone the wage rate, but also the man-hours worked.

Union's Policies Deprive Their Members of Jobs

The individual who is honestly interested in increasing the purchasing power of railway employees will have to admit that it might be possible to enlarge total purchasing power of these employees by lowering the average wage rate, quite as much as by raising it—if such a reduction would help to restore railroad credit and thus encourage the railroads to spend more money on

improvements. Like all economic problems—the question of improving the well-being of railroad employees is one of establishing balance. If wage rates should be increased without curtailing the man-hours worked, then Mr. Harrison's defense of such rates would be justified in the protection of the interests of employees. But when he defends such rates, in the face of the obvious fact that they are resulting in the furloughing of men of junior seniority status, he has abandoned all realism; and, worse than that, he has abandoned the protection of the interests of younger employees whom he is paid to defend. He is protecting the "old heads" in the highest wages in history in the full knowledge—for Mr. Harrison is an intelligent man—that the maintenance of these wage rates inevitably requires the furloughing of thousands of junior men who would otherwise be retained on the payrolls.

Mr. Eastman is right—railway wages and working conditions *do* need a thoroughgoing investigation by some impartial authority. They will, of course, receive some analysis in the conferences between the unions and the managements in the forthcoming wage reduction negotiations—but it is doubtful that the rights and interests of the junior employees will be adequately protected in these discussions, except to the extent that railway managements may be able to represent them, because the railway labor organizations have become almost exclusively spokesmen for the "old heads." They—and in particular the train and engine service unions—persist in taking highly technical back pay cases to the National Adjustment Board, mulcting the railroads for thousands of dollars of pay for work not done. And, under present conditions the only way to get the money to pay this back pay is to lay off some junior men—usually in the maintenance of way or equipment departments.

Is Mr. Harrison Representing Clerks, or Train Service Men?

The idea of the union chiefs seems to be: Why reduce wages to protect railway employment? Let the railroads furlough as many as necessary—and let government relief take care of them. In the meantime we will sell ourselves politically to the "old heads" who have the majority of the voting strength, and thus make ourselves solid in our jobs. With high wages, they can afford to pay stiff dues, and that will keep our unions going and our salaries regular anyhow. . . . Human beings being what they are, this policy is understandable—but it isn't very high minded.

What is not understandable is Mr. Harrison's fury at Commissioner Eastman's suggestion of an investigation into railway wages and working conditions. Such an inquiry would not "show up" the employees whom Mr. Harrison is paid to represent. Clerks and freight handlers, these men are well paid on the average—but they do not receive huge amounts of pay for work not done—as many train and engine service employees do.

On the average their monthly compensation is much less than that of train and engine service employees, and they work 8 hours a day for their wages and not 5 or 6 hours a day 15 days out of the month. Neither are there "full crew" agreements to force the employment of unneeded clerks and freight handlers, as there are in train and engine service.

The possible disclosures of such an investigation as Mr. Eastman has proposed would embarrass the employees who pay Mr. Harrison's salary little, if at all. On the contrary, there is every reason to believe that such an investigation would show that employees who are not Mr. Harrison's constituents are getting a far larger proportion of the total railroad dollar than that to which they are entitled—and that situation, if it exists, is probably curtailing the employment, and hence the total compensation, of the employees whose dues pay his salary. Both Mr. Harrison personally, and the membership he represents, have far more to gain from such an investigation as Commissioner Eastman has proposed than they have to lose. We will welcome the day—and we believe Mr. Harrison's membership will join us—when Mr. Harrison ceases to keep silent about the present unfair division of the railroad wage dollar between those who work 8 hours a day for it and those who do not. And what a day of victory it will be for junior railway employees when Mr. Harrison—or some other railway labor executive—summons up the courage to recognize that railway employee prosperity is measured in part by the number of men working and not solely by the hourly wage rate!

Don't Maintenance Employees Need "Purchasing Power" Too?

The railways have announced their determination to place into effect wage reductions which will save 250 million dollars on the basis of present payrolls. This emphatically does not mean a reduction of 250 million dollars in the purchasing power of railway employees—because the purpose of the reduction is to restore railroad credit; and the restoration of railway credit would immediately increase their employing power in maintenance and improvement projects which now are of necessity held in abeyance.

We have already heard the criticism that, whereas the wage increases last year were at a flat rate per hour, the reductions now proposed are a straight percentage, thus favoring the lower-paid employees. But—with the unions basing their policy on socialistic grounds of what employees "ought" to be paid, on "needs" rather than in proportion to their contributions, what could be fairer, even from the union point of view, than a reduction of greater dollars and cents amount from the well-paid than from the moderately-paid? Under economic distribution, wages like every other factor of production are determined by competition. It is probably true that wages of the great mass of railroad employees whose jobs are similar to those in other industries (me-

chanics, clerks, common laborers) are not greatly out of line with wages in these other industries. But it is true beyond question that there is no class of industrial employees anywhere which enjoys the wage and hour advantages of train and engine service employees. It is not economic competition which has driven these wages up, but labor union coercion and political pressure—and a strange reluctance both on the part of railway managements and the leaders of the non-operating unions to inform public opinion as to what the train and engine unions are getting away with. Because, if the facts were known, what branch of public opinion would support a strike threat to sustain wages ranging as high as \$300 a month and upward for 30 hours, or slightly more or less, of work per week?

Interest Payments Also Boost "Purchasing Power"

Even if a reduction in railway wages meant less money in the aggregate being paid to railway employees—which is extremely unlikely—it does not follow that purchasing power would be reduced, from the national point of view. We know of a small church foundation which owns \$40,000 of railway bonds upon which interest is in default and, as a consequence, the church property is going without necessary repairs. The resumption of interest payments on these bonds would add to the purchasing power of a number of painters, plumbers, carpenters and roofers certainly as much as it reduced the purchasing power of railway employees. But, as we have pointed out above, a substantial railway wage reduction, because of its favorable effect on

railway credit, would probably not reduce railway employees' purchasing power at all—quite likely, by restoring the railways' credit and buying power, employees' total purchasing power would be increased.

Time for Junior Employees to Speak Up

If Mr. Harrison and Mr. Robertson and the other railway union leaders would pay a little more attention to the interest of junior railroad employees—and would co-operate in policies which would enable the railroads to employ more men instead of fewer—they would do a real service, rather than mere lip service, to the bulk of their members. And, moreover, they would be protecting the future of employees—as they certainly are not doing now, not even that of the "old heads." Because the railway industry cannot indefinitely continue to employ even the present roster of employees unless its credit is restored. And credit cannot be restored until a dollar invested in railroads is offered better protection than it now has against confiscation.

The union chiefs' reckless demands for scaling down railway capitalization, regardless of the actual economic usefulness of the railway facilities which that capitalization represents, are about as short-sighted a policy for the future employment-giving capacity of the railway industry as any which could be imagined. It is high time that railroad employees, and particularly the younger ones who have from 10 to 30 years' more service before they reach the retirement age, should awaken to the destination to which present union leadership is taking them.

The Tragedy of the Railroad Situation

A lay-off effective Monday "until further notice" by the New York, Ontario & Western Railway Company of approximately sixty skilled employees of their car shops here, resulted in a march by the men to the New York State Employment Service office at 15 King street.

"We're here to register for unemployment insurance benefits," asserted Angelo R. Masi, general chairman of the Wallkill Lodge, Brotherhood of Railway Carmen, and secretary-treasurer of the O. & W. System Federation of the Railway Employees' Department of the A. F. of L. He acted as spokesman for the group.

Appearance of the mass delegation at the employment service office was arranged, Mr. Masi said, not as a protest against the railroad's action, but as an effort "to arouse the interests of merchants and tradesmen here in the lack of business given the O. & W. by Middletown."

"If this city would support the O. & W. more we would have more work," said Masi. "The railroad is the largest industry the city has. Our men own their own homes. Their earnings are spent here. When we are laid off it affects merchants and tradesmen of the area."

"Any freight business which the business men could swing to the O. & W. would indirectly benefit the business men."

Notices of the lay-off of the carmen were posted early

this week at the shops. Reportedly no other departments were affected. But the words on the notice that the lay-off was "until further notice" prompted the men to plan the march through the city today. On prior lay-offs this year notices have designated a definite period. There was one lay-off of the carmen for a week the last of March, another of similar length the first of January, and there was a three-day week schedule in February.

Recently the carmen have been working five days a week.

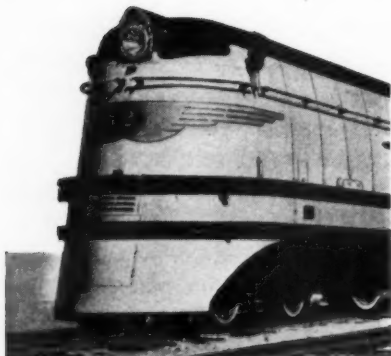
The group formed at nine a. m. at Lowe and Wickham avenues and marched in a column of twos to the King street employment service office. There only a part of the delegation could be admitted at one time. The men under instruction of the office employees filled out the forms for unemployment insurance benefits and left quietly.

The entire demonstration was conducted in perfect order and with a quiet dignity that made a distinct impression on spectators.

Although the O. & W.'s coal business reputedly picked up somewhat last winter over the prior year, the road's box car freight, merchandise shipments, are said to have been dwindling steadily for the last decade. The carmen's force formerly numbered about two hundred men.

From the Middletown (N. Y.) Times Herald

Possibilities of the Modern Steam Locomotive*



Developments which are keeping steam locomotives abreast of the changing requirements of passenger- and freight-train movements



By W. C. Dickerman

President, American Locomotive Company

SPEED, and more speed, is the order of the day and, without question, high-speed passenger trains with every conceivable comfort are the trains of the future. The greatest development in railroading for the last five years has been in the domain of high speed. The "Hiawatha" the "400," the "Super Chief," the "City of Los Angeles" and other famous trains, have shown the trend.

And one thing more is certain: Whenever speed comes under consideration, the power of the locomotive and the weight of the train are the things that matter. The former must be as large, and the latter as small, as possible, both, of course, within reasonable limits. From the point of view of the locomotive alone, the power-per-pound factor, the ratio of the power of the locomotive to its weight is of great importance. The accompanying table will be of interest in this respect.

The rail horsepower for steam locomotives with direct drive (items 1 and 2 in the table) has been taken from actual tests. For the turbine locomotives with direct drive by precision gears (item 3), the mechanical efficiency is taken equal to 94 per cent. For the turbine locomotive with electric transmission (item 4) it has been taken as 80 per cent; for Diesel-electric locomotives the efficiency of the electric transmission has also been taken as 80 per cent from the shaft to the wheels.

The weights in all cases are in American short tons. The weight of the tender for steam locomotives is with half supply of water and fuel; for the turbine and Diesel-electrics, with half supply of fuel oil. As the European tenders are comparatively small, the specific power factor for the European steam locomotives (items 1 and 3) is very favorably, and for the American locomotive (item 2), unfavorably affected.

Although research has been going on for several years in the question of the best kind of power for high-speed trains, there is still a lot we do not know about the all-around economy of the different new trains. We do know, however, that the technical potentialities of the

Diesel-electric locomotive are about the same as they were at the beginnings. A number of Diesel engines are used, each of a power large enough to provide an aggregate equal to the power of the locomotive; for example if the horsepower of the Diesel engine is 900 and 5,400 is required for the train, six such engines are necessary. Furthermore, each Diesel engine must have one electric generator, or six altogether, and 12 electric motors, depending upon the number of driving axles. A further essential part, the electric control, consists of a number of contactors, relays, switches, etc., developed long back

Specific Power Factors of Recent Steam and Diesel Locomotives

Item	Locomotives	Rail horsepower	Weight in working order ¹ , tons	Specific power factor, hp. per ton
STEAM LOCOMOTIVES				
1	Rebuilt P. O.-Midi (Chapelon)....	3,500	182 ²	19.2
2	New York Central 4-6-4 locomotive (J-3)	4,230	293 ³	14.5
3	L. M. S. 4-6-2, direct drive turbine locomotive	2,500 ⁴	171	14.7
4	U. P. 4-6-6-4 + 4-6-6-4 turbine locomotive	4,000 ⁵	500	8.0
DIESEL-ELECTRIC LOCOMOTIVES				
5	P. L. M. 4,400 hp. (engine shaft) ..	3,920	246.4	15.9
6	Santa Fe Superchief 3,600 hp. (engine shaft)	2,880	283.6	10.2
7	City of San Francisco, City of Los Angeles 5,400 hp. (engine shaft)	4,320	437.9	9.3

¹ With one-half of supply of water and coal (one-half of supply of fuel oil for Diesel-electric locomotives).

² With an eight-wheel tender (European style).

³ With a 12-wheel tender (American style).

⁴ With gear transmission.

⁵ With electric transmission.

for straight electric locomotives. The whole electric transmission is responsible for the losses, which are between 19 and 24 per cent, making the power of this particular locomotive between 4,100 and 4,400 at the rails.

The main advantages of a Diesel-electric locomotive are that it delivers full power at almost all speeds except the extreme low (Fig. 1), including the very low, thus

* Abstract of a paper presented before the Western Railway Club at Chicago on April 25, 1938.

insuring to the locomotive good starting and accelerating properties; that it has only rotating weights in the driving and driven parts and is well balanced and, therefore, easy on track. The speeds however, cannot be higher than the vibration of the cars, many safety considerations and brake equipment permit.

When six or so Diesel units are combined in order to provide around 5,000 hp., such a locomotive, as the Union Pacific experience indicates, has a length of 209 ft. and weighs about 440 tons. It may cost upward of \$550,000 and the best possible utilization of this expensive locomotive is required, as well as the highest economy in fuel, to justify the enormous investment. Other comparisons have been made on several occasions. But many of the actual constants, like availability, fuel consumption and maintenance cost, can be found only from experience in actual service and are still lacking. We hope that the experience with the "Super Chief" and the two "Cities" will reveal this information and will give us the opportunity of making an accurate comparison.

Present-Day Steam Locomotives

The possibilities of the Diesel-electric locomotive are already fixed and known; they are as given above. Not so with the steam locomotive. Although it is over one hundred years old, it is still in the process of evolution, development and perfection, is not the same as the steam locomotive of yesterday, and is rapidly adapting itself to the demand for high power and speed.

A rail horsepower of 4,100 to 4,400, to compare it with the above Diesel-electric locomotive, can be met by the steam locomotive with ease. A 5,500-i.-hp. steam locomotive will take care of the deficiency of acceleration at low speed and will impart more energy to the train up to 100 miles per hour, especially at high speed when it is most valuable, than the Diesel-electric of 5,400 engine shaft horsepower.

It will also have a good margin for air conditioning, heating and other necessities of comfortable traveling. It will be only about 100 ft. long, including tender, as against 209 ft. It will weigh slightly less than the Diesel-electric—420 tons—as against 438 tons, and a great part of this will be the weight of the tender—185 tons—with the major part of this weight that of cheap tank plates, water and coal, as compared with expensive machinery, like Diesel engines, and expensive material like copper in electric generators and motors.

With the same effective rail power, it will cost much less than the Diesel-electric—approximately \$175,000 as against more than a half million—or only about one-third as much.

Yet it will be good for 100 miles an hour and higher speeds if necessary, pull the same trains at the same average speeds and make almost as long runs, as the Diesel-electric locomotive.

True, the steam locomotive will have the disadvantage of lower thermal efficiency, but the difference will be partly offset by the cheapness of fuel;—instead of refined Diesel oil, cheap coal can be burned. Even if oil is used, it will be crude bunker oil, where it is cheap. And then there remains in favor of the steam locomotive its simplicity of construction and, consequently, of operation, and the lower first cost in the ratio of one to three or more in relation to the Diesel-electric locomotive, with the result that the fixed charges on the investment and the cost of deterioration will be lower.

In order to be fair to the Diesel-electric locomotive, we should not ignore the fact that, so far, the mileage of the steam locomotive has not reached that of some Diesel-

electrics and we must admit the consistency of operation of these units. However, the availability of the latest steam locomotives is constantly increasing, and the gap is narrowing.

Diesel Electric Switchers

Please understand that the foregoing remarks apply, as stated, to the comparison between steam and Diesel-electric locomotives for road service only. A somewhat different condition is found in switching service. More than ten years ago, the first Diesel-electric switcher made its appearance on one of our American railroads. It was placed in service and its performance carefully watched. Minor troubles were experienced and overcome. It is still doing good work, and has clearly demonstrated that in congested terminals and in busy industrial plants where 24-hour daily service is necessary this type of power unit has an advantage over steam that cannot be overlooked. Since that time, as you all know, the Diesel-electric switcher has made a place for itself, not only in freight yards but also in passenger terminals, and although its first cost is higher than that of the steam locomotive of equivalent power, we have found that the intensive utilization of this unit and the high availability factor results, not only in lower operating costs, but in expediting traffic. At the end of last year, there were in service in this country and Canada nearly 350 Diesel-electric switching locomotives up to and including 900 hp. This unit is, therefore, here to stay.

Adaptation of Steam Locomotive to High Speeds

When, in 1933 and 1934, the Diesel-electric unit was first being considered, the main barrier to its use by our railroads was the existing weight of cars and trains.

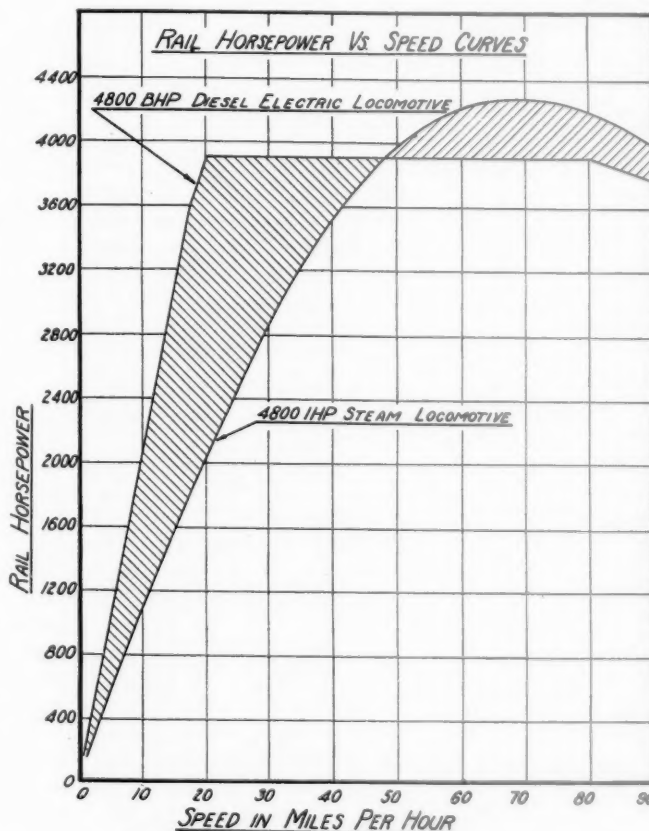


Fig. 1—Rail-Horsepower—Speed Characteristics of Diesel-Electric and Steam Locomotives

The first Dieselized trains of the Union Pacific and Burlington were limited to 600 hp. Although various new metals, along with the helpful technique of streamlining, had for some time been available for lighter cars and trains, the Diesel-electric unit performed a notable service in making them not only practicable and desirable but necessary. Therefore manufacturers and railroads energized the epochal turn to strong aluminum alloys, then, step by step, to the stainless steels and, in due course, to less expensive alloy steels such as Cor-Ten.

This evolution brought about by the development of the Diesel-electric locomotive, is now helping the steam locomotive: If the trains can be made lighter, the required power of the locomotive can be less, excepting for the new demand for increased speed. It is readily possible to increase the speed of the locomotive with the same power, without going to the multiple-unit locomotive, which is sometimes considered the advantage of the electric transmission—either the straight-electric or the Diesel-electric locomotive—and to do this with the one-boiler steam locomotive. Long and heavy trains of 1,200 tons, composed of cars of reasonable weight, are now being operated on a few roads by locomotives of 5,000 hp. at speeds up to 90 miles an hour. An increase of speed to 100 miles an hour for trains of this type, and locomotives up to 6,000 hp., are now being considered. Greater powers or speeds over 100 miles an hour are not likely to be necessary for a long time to come. When they do come, the steam locomotive will still be able to meet the demand, because it is flexible and works with such a flexible medium as steam. Its possibilities go far beyond this range, as it will be seen presently from our further analysis of recent locomotive improvements.

Margin of Power of the Steam Locomotive

It may not be amiss to mention here that the Diesel power has been somehow intrinsically connected with articulated units, probably because the articulation obligingly makes it very difficult to increase the number of cars. The Diesel engine does not like to be overloaded and shows unmistakably its aversion by the behavior of pistons, piston rings, exhaust, etc., while the steam engine is not so fussy; it graciously responds to overloading, as it has proved by the "Hiawatha," designed originally for six cars, and when traffic required, it pulled seven, then eight, and ultimately, nine cars without any change in the timetable. Naturally, the "Hiawatha" train, as many other high-speed steam trains, was built of individual detachable and attachable cars. This is not the case with the Diesel-electric articulated flyers.

Growth of Steam Locomotive in Last 20 Years

A good example of the improvements in locomotives within the last twenty years is offered by the growth of passenger motive power on a particular railroad which has utilized four outstanding designs over a period of about a quarter of a century. The original type was the Pacific, or 4-6-2. Its total weight was about 270,000 lb., of which 171,500 lb. was the weight on driving wheels. The starting tractive force was 30,900 lb. and the indicated horsepower was about 2,000. The boiler pressure was 200 lb. per sq. in. and the diameter of the driving wheels was 79 in.

The three-driving-axle type has been retained for the other three classes of locomotives with slightly increased weight and approximately the same weight on drivers. The tractive force, and particularly the horsepower, have continuously gone up with the same number of driving wheels, as shown in Fig. 2. Here it is to be noted that

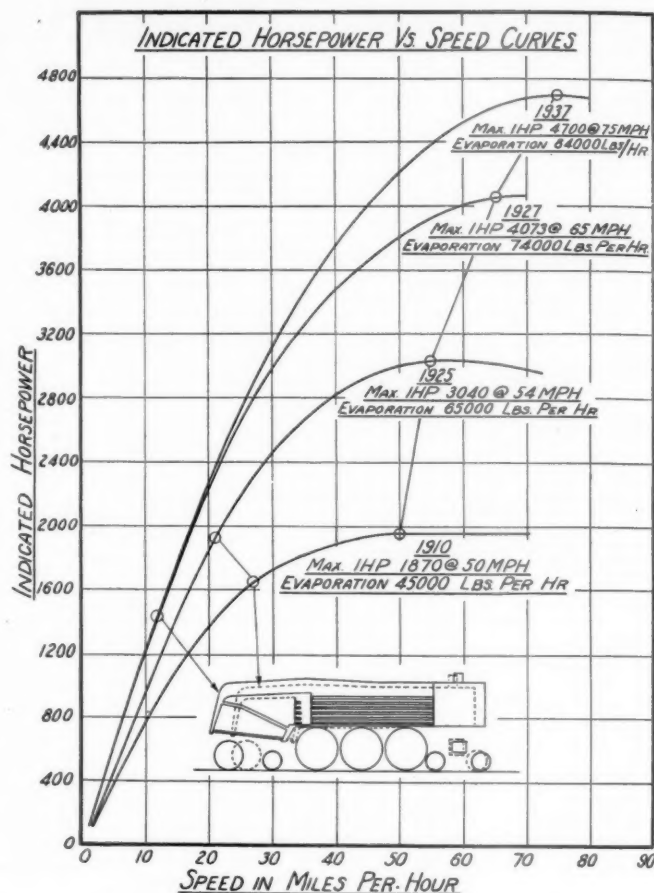


Fig. 2—How Horsepower Capacity Has Grown

the maximum power in each later development was reached at a higher speed than shown by its predecessor.

The general dimensions, except boiler pressure have not greatly changed. Nevertheless, the power has increased 15 per cent, compared with a locomotive of practically the same dimensions, and 136 per cent compared with a locomotive, with the same number of driving axles and approximately the same weight on drivers, built 25 years ago. This enormous improvement is partly due to higher boiler pressure, but mainly to refinement in the locomotive design and to other improvements, which we are presently going to discuss.

The locomotive tubular boiler with the firebox of the old Stephenson design is a very efficient and compact steam generator. Confined to the limitations of railroad clearances and weight, probably no other boiler type could evaporate nearly 60 tons of water per hour up to 300 lb. pressure and superheat it to 750 deg. F., as a recently built locomotive boiler did. A 45 ton locomotive boiler, fully equipped with feed water heater, superheater and necessary piping, weighs about 78 tons, is simple to construct and cheap to build. The thermal efficiency measured in B. t. u.'s from the coal to the heat in the steam is up to 80 per cent. No wonder that nothing more practical has been developed in 109 years.

While the design of the boiler has changed a little in principle, the main progress has been made in proportions and in the addition of a combustion chamber, of a very practical brick arch, supported by water tubes, of Thermic syphons and of circulators, all of which improved water circulation, fuel combustion and increased the boiler efficiency. Hundreds of other improvements have been suggested for a locomotive boiler, tried and discarded.

The above mentioned weight of a large size boiler is

also due to a recent development. Only about ten years ago, when on the one hand, the necessity and importance of power in a locomotive was forcefully brought to the attention of railroad mechanical men and locomotive builders, and on the other hand, the weight limitations became very hindering, steel alloys which permit an increase of 25 to 30 per cent in the tensile strength of parts under pressure were tried and soon won universal acclaim. At present, boilers in all modern locomotives have some sort of high-tensile steel, either with nickel or silicon-manganese.

Internal Streamlining

After generating high-pressure highly-superheated steam the next problem is the most effective utilization of this precious steam. In 109 years of the existence of the locomotive we have learned by research and experience something of how to do it. For American conditions, where coal is in abundance and comparatively cheap, and on the other hand, labor is high, we find that the two-cylinder simple-expansion high-superheat engine is the all-round best engine for locomotives. An old fact, however, has lately been rediscovered. We have known for years that steam loses part of its energy if it is squeezed through narrow openings. A drop in pressure takes place, in a phenomenon called "wire-drawing." Sudden change in the direction of steam flow also brings about a certain loss of energy. Smooth streamlined contour of steam passages, is therefore to be preferred and omission of sharp corners is recommended.

All this gave rise to wide, nicely shaped steam admission passages in the cylinders and steam-distribution valves. Special attention was paid to exhaust passages as the volume of the low pressure exhaust steam is incomparably larger than that of admission steam, and the resistance of the exhaust steam on leaving the cylinder increases considerably the back pressure, detracting a noticeable part from the steam diagram of the cylinder. The French engineers, especially Mr. Chapelon, famous for the successful rejuvenation of a great number of French locomotives during the last five years, began to pay much attention to the proper "circulation" of steam, or "inner streamlining," as this is now called. There is no doubt that the outer streamlining of locomotives and trains, which became so popular during the last five years, had something to do with the development of the ideas of the inner streamlining and has resulted in lower drops in steam pressures and lower steam consumption per unit of power, thus increasing the locomotive power.

In this country, without going so far as to coin new words of somewhat doubtful meaning, the ratios of steam passages for modern locomotives have been lately revised and better, unobstructed steam circulation was thus obtained.

Improvement in Counterbalancing

A very important part in adapting the steam locomotive to high speed was played by the improvements in counterbalancing of both the revolving and reciprocating weights of the driving mechanism. As it is known, the revolving weights can be fully balanced; the reciprocating can be balanced only partly, and by doing so, a dynamic augment is introduced from the counterbalances in the wheels. This augment is in proportion to the square of the rotating speed of the wheels and the balanced portion of the reciprocating weights. In badly balanced locomotives it results in an injurious vertical impact on rail and may, in a certain position, lift the wheel and cause the locomotive to jump the track.

In order to reduce all these undesirable phenomena, the reciprocating parts and the rotative speed of the wheels are reduced as much as possible. The first is done by using strong, high-tensile alloy-steels for main rods, piston rods, pistons and crossheads; the second, by increasing the diameter of driving wheels. In modern locomotives the driving mechanism is very carefully designed and the materials properly chosen. In a recently rebuilt 4-6-4 type locomotive of the Chicago, Burlington & Quincy, called "Aeolus," the reciprocating weights have been reduced from 2,110 lb. to 995 lb. on each side—53 per cent—and the counterbalance properly dimensioned is now giving a dynamic augment of only 5,934 lb. at 90 miles per hour instead of an augment of 18,783 lb. before the conversion. In the New York Central new 4-6-4 type locomotive, where the reciprocating parts were not so heavy from the start, the reduction in weight of reciprocating parts is 49 per cent.

The diameter of driving wheels in modern high-speed passenger locomotives is now usually made 84 in., which at 100 m. p. h. corresponds to only 400 r. p. m. The larger wheels are also very useful for a convenient location of the proper size counterbalance in the wheel. The double-disc wheel, which has recently come into vogue and is now almost in universal use on high-speed locomotives, is also very conducive to this end.

Better Riding Qualities

In addition to better balancing, the recent steam locomotives have gone through a development of more flexible suspension and better guiding in curves. Locomotive suspension springs are now being supplied with coil springs at their ends in order to increase their vertical

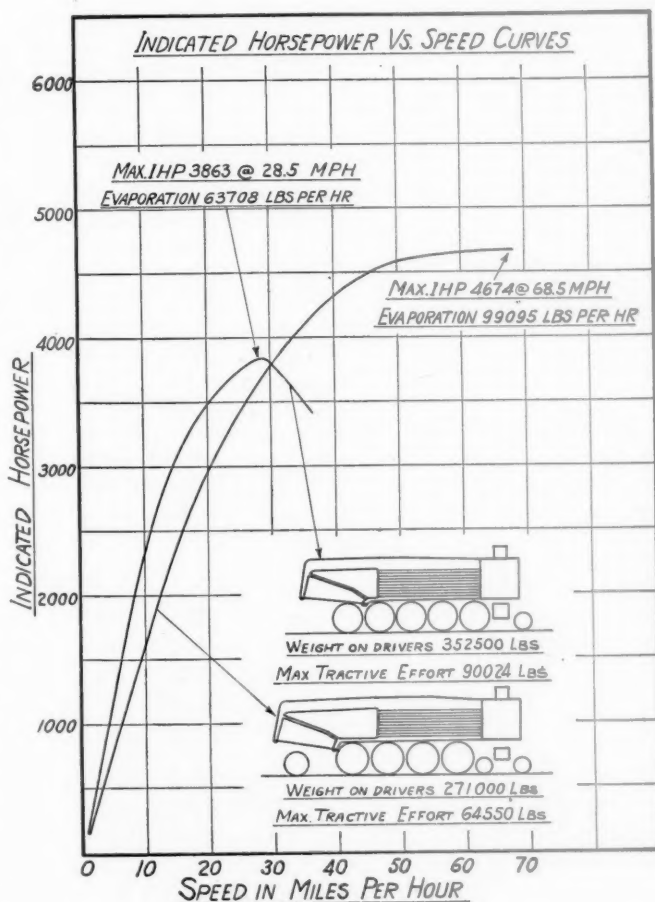


Fig. 3—Freight Locomotives Increase in Horsepower Capacity and Speed

flexibility. Lateral flexibility is obtained by providing lateral cushioning devices on some driving axles and more careful design of trucks, front and back. The boiler height—distance of the central line of the boiler shell from the top of the rail in vertical direction—has already reached 126 in., and its high location has not shown any detrimental effects on the stability of the locomotive, contrary to the apprehensions of the advocates of the low center of gravity for moving vehicles; on the contrary, the high-pitched boiler seems to have improved the riding qualities of locomotives at high speeds. Of course, attention should be paid against overturning of locomotives on curves, but locomotives with a center of gravity located as high as 80 in. above the horizontal plane of the tops of the rails have been safely in service at speeds over 100 miles an hour. The superelevation of the outside rail on curves has been, of course, carefully checked.

Integral Steel Castings

Of great importance to the availability of the steam locomotive is the integral steel casting, which, introduced by the General Steel Castings Corporation about twenty years ago, met with great success in the construction of locomotive beds, trucks and tender underframes. The locomotive frames are now being cast whole, with cross-ties, front and rear bumper plates, steam cylinders, brackets for brake rigging, air reservoirs and other miscellaneous parts, the whole casting being called a locomotive bed. Likewise, truck frames and tender frames with water bottom are cast whole. This practice decreases the number of flanges and bolt connections, reduces the cost of maintenance, the length of time necessary for repairs in the shops, and thus increases the availability of the locomotive.

To the same category of improvements belongs the test which is now under observation on the Delaware & Hudson, for which a totally welded boiler carrying a pressure of 225 lbs. per sq. in. has been built with a saving of 2,180 lb. and installed in a 2-8-0 locomotive. This type of boiler construction, if successful, will tend to reduce the weight of a locomotive and thus permit a corresponding increase of the power. Moreover, the welded boiler offers also the advantage that seams, rivets, welts and reinforcing plates are avoided, with the result that corrosion and cracks due to caustic embrittlement are almost totally eliminated.

Streamlining

Only with the development of aeronautics and the advent of wind tunnels, when means for a scientific study of the best shaping of the front, tail and other parts of railroad vehicles were provided, have we achieved nicely streamlined cars, locomotives and trains. The Chicago, Milwaukee, St. Paul & Pacific locomotive "Hiawatha" and the Gulf, Mobile & Northern Diesel-electric train "The Rebel" are the direct outcome of wind-tunnel tests made in 1934 in the aeronautical laboratory of the New York University by the builders of the locomotive and train, the American Locomotive Company and the American Car & Foundry Company.*

In steam locomotives the requirements of diminishing the air resistance always militate against the accessibility of the moving parts of a locomotive, but a compromise in the form of shrouds is usually worked out which permits retaining the graceful appearance of a swiftly moving locomotive and at the same time a saving, for

the locomotive alone, of about 200 to 350 hp. at 100 miles an hour, depending upon the degree of streamlining. These results have not only been found from tests on models in the wind tunnel, but also from tests abroad with full-size locomotives. On an eight-car fully streamlined train with a semi-streamlined locomotive, the expected saving in horsepower should amount to 600 to 700 at 100 miles an hour, which may represent in some cases 10 per cent of the whole power of the locomotive.

The Modern High-Speed Freight Locomotive

The backbone of railroad traffic, the bulk of the railroads' net income, is its freight movement. This discussion, therefore, would not be complete without some reference to the subject of freight locomotives. Naturally, the greater reservoir which freight traffic provides gives much larger possibilities for economies.

As a matter of fact, there is no good reason for making a distinction between passenger and freight locomotives, now no more than a remnant of an age-long custom.

Years ago the speeds of freight and passenger trains were so different that the locomotives could not be made alike. A freight locomotive would usually have larger cylinders and smaller wheels in order to exert greater tractive force. Passenger locomotives had smaller cylinders and larger wheels. The diameter of driving wheels would vary from 48 in. in freight to 96 in. in passenger locomotives.

Now the demand for freight is such that it must be moved quickly, and the speed of freight trains has been going up for many years. The average speed of some trains reaches 45 to 50 miles an hour, necessitating a maximum speed of 70 miles an hour. For a great many railroads where the speed of passenger trains is not exceptionally high, there is very little difference between the requirements for passenger and freight locomotives, and now locomotive driving wheels vary in closer limits, 70 to 80 in. The difference, therefore, between freight and passenger locomotives is very small, the high-speed passenger locomotive being confined to the 4-6-4 and 4-8-4 types, while on many roads the 4-8-4 type can be equally well used in freight service. This increasing interchangeability between passenger and freight locomotives operates, of course, to the advantage of steam.

Of course, there are cases where higher tractive forces, and consequently, more driving wheels, are needed, especially on roads with heavy grades. The trend in this case is to divide the number of driving axles between two frames, using an articulated locomotive of the non-compound simple-expansion type, with no more than six driving wheels in each unit. The 4-6-6-4 locomotives recently built for the Union Pacific, Northern Pacific and Western Pacific railroads are good examples of this type of locomotive.

What we have seen regarding the growth of power of passenger locomotives for the last quarter of a century applies also to freight locomotives in the above sense. The horsepower of these locomotives have been going up to 5,000 to 6,000. The boiler capacities are about the same as those of the high-speed passenger locomotives with three driving axles and the difference in design of the boiler is very small, except that the length of the boiler conforms to the wheelbase, when a different wheel arrangement is used. In Fig. 3 you will note that high tractive force does not necessarily result in high horsepower. The locomotives shown were both built for the same road,—one gives high tractive forces at low speeds, the other with much less weight on drivers, and consequently much less starting tractive force, gives greater

* Transactions of The American Society of Mechanical Engineers, Vol. 59, No. 7, October, 1937, p. 617, and Railway Mechanical Engineer, April, 1938, p. 129.

sustained horsepower at the normal operating speeds of today.

The various improvements which we have just discussed for high-speed passenger locomotives are now being incorporated in freight locomotives as well. The pressures and superheats have been raised and are now about the same as in passenger locomotives. Cross-balancing and improvements in riding qualities are being made whenever possible. Roller bearings and locomotive beds are very frequently used. The increase in reserve power and these improvements result in better utilization, higher speeds, longer runs, increase in availability and economy. A modern freight locomotive will permit fewer stops, quicker movement of goods, smaller consumption of fuel, reduction in cost of maintenance, curtailment, possibly even elimination, of double heading and helper mileage, and will result in a better operating ratio.

Beginning from 1921, when on Class I railroads 162 lb. of coal were used in freight service to move 1,000 tons of freight and equipment for a distance of one mile, the moving of the same amount over the same distance required a gradually descending amount of coal. Five years later, in 1926, it was only 137 lb., 15.5 per cent less. Five years later again, in 1931, it was 119 lb., a further decrease of 13.2 per cent. In 1937 it was 117 lb., a total saving of 27 per cent compared with the fuel consumption in 1921, sixteen years ago and the lowest on record. Perhaps we can visualize it better when I say that about $\frac{1}{8}$ lb. of coal now moves 1 ton of freight a distance of one mile.

Likewise, the amount of fuel used by Class I railroads in moving a passenger-train car for a distance of one mile was also gradually decreased from 17.7 lb. in 1921 to 15.1 lb. in 1937.

These records are the more noteworthy when we consider the condition of the locomotive inventory as it is today. Of a total of 44,400 locomotives in service on January 1, 1937, average age of which is 20 years, 31,300, or 70.5 per cent, were locomotives installed prior to 1920; 11,200, or 25.2 per cent, were installed between 1920 and 1929 and only 1,905, or 4.3 per cent of the total, have been installed since 1929. The effect on maintenance costs of such a distribution merits our serious consideration.

* * *



Photo by Information Bureau of Switzerland

Three-Car Multiple-Unit Electric Express Train on the Swiss Federal System

1937 Rail Output at Seven-Year Peak

ACCORDING to statistics compiled and just released by the American Iron & Steel Institute, rail production in the United States in 1937 was greater than in any year since 1930, reaching a total of 1,445,739 gross tons, as compared with a production of 1,873,233 gross tons in that earlier year. This production, while 428,494 gross tons below that in 1930, was 1,043,173 gross tons greater than the output in 1932, the low point of production during the depression, when the quantity of rails rolled amounted to only 402,566 gross tons, and was 225,893 gross tons greater than the production in 1936, 1,219,846 gross tons, which, itself, was a six-year high.

In the 1937 rollings, the tonnages produced in all of the classifications as to weight exceeded those in 1936. In the heaviest sections, including those of 136 lb. and over, production increased from 22,680 tons in 1936 to 31,238 tons in 1937, an increase of 37.7 per cent. This represented a reversal in the trend from 1935 to 1936, when production in these largest sections decreased 36,178 tons, or 61.4 per cent. In the weight group including sections from 120 lb. to 136 lb., production continued to increase, amounting to 389,909 tons in 1937

Production of Rails by Weight Per Yard

Years	Under 50 pounds	50 and less than 85 pounds	85 and less than 100 pounds	100 and less than 120 pounds	120 and less than 136 pounds	136 pounds and over	Total
1920	489,043	433,333	952,622		729,118		2,604,116
1921	211,568	214,936	902,748		849,566		2,178,818
1922	265,541	274,731	728,604		902,900		2,171,776
1923	272,794	300,907	864,965		1,465,850		2,904,516
1924	191,046	213,274	853,431		1,175,581		2,433,332
1925	163,607	219,648	765,371		1,636,631		2,785,257
1926	197,260	256,287	797,662		1,966,440		3,217,649
1927	161,836	173,257	539,445	1,314,424	617,524		2,806,486
1928	134,197	125,726	465,393	1,203,749	718,428		2,647,493
1929	141,362	102,944	499,628	1,233,599	834,605		2,722,138
1930	95,626	81,299	267,879	835,496	592,933		1,873,233
1931	50,089	25,524	123,398	495,752	462,988		1,157,751
1932	16,655	13,705	28,593	215,091	128,522		402,566
1933	*49,116	†15,413	40,973	154,007	156,787		416,296
1934	*70,085	†17,111	73,639	491,642	325,942	31,805	1,010,224
1935	*57,127	†14,758	85,627	340,800	154,367	58,858	711,537
1936	*96,111	†21,097	99,961	611,527	368,470	22,680	1,219,846
1937	*101,687	†82,338	112,638	727,929	389,909	31,238	1,445,739

* 60 pounds or less per yard.

† Over 60 and less than 85 pounds per yard.

as compared with 368,470 tons in 1936, an increase of approximately 6 per cent, while in the group embracing sections from 100 lb. to those weighing less than 120 lb., the increased production was from 611,527 tons in 1936 to 727,929 tons in 1937, or approximately 19 per cent.

In the lighter sections, including rails weighing 85 lb. per yard and less than 100 lb., production stepped up from 99,961 tons in 1936 to 112,638 tons in 1937, or 12.7 per cent, while production in the "50-lb. and less than 85-lb." group showed an increase from 21,097 tons to 82,338 tons, or 290 per cent. This largely increased production in the group including 50-lb. to 85-lb. rails was the first appreciable increase in the rolling of these lighter sections since 1931, when only 25,524 tons were rolled.

The bulk of the rails produced in 1937, as usual, was from open-hearth steel, the tonnage in this classification amounting to 1,411,655, or 97.64 per cent of the total production. The production of rails from Bessemer and electric steel continued insignificant, amounting to only 625 tons, and all of the rails produced from these steels were in weights of 60 lb. or less. In addition to the rails rolled from new steel in 1937, the total production included 33,459 tons of rails rolled from old rails; 39,119 tons of girder and high tee rails; and 757 tons of alloy steel rails.

Bills for Equipment and Employment Loans

WASHINGTON, D. C.

RELAXATION of requirements for railroad loans from the Reconstruction Finance Corporation is proposed in bills introduced this week in both houses of Congress by Senator Truman of Missouri and Representative Steagall of Alabama. The bills, S. 3948 and H. R. 10505, along with the pending bill to eliminate land-grant rates, are designed to carry out the emergency railroad legislative program agreed upon at the April 26 conference of Congressional and Administration leaders and representatives of railway management and labor. The Senate bill, which Senator Truman introduced for Chairman Wagner of the committee on banking and currency, was reported favorably by that committee on May 5.

Equipment buying and increased employment of maintenance forces are expected to follow the waiver of the R. F. C. Act's provision that loans for such purposes must be certified by the Interstate Commerce Commission as fully and adequately secured. Instead such loans could be made if the I. C. C. and the R. F. C. find that "the prospective earning power of such railroad, together with the character and value of the security offered, furnish, in the opinion of the Interstate Commerce Commission and the Corporation, respectively, reasonable assurance of the retirement or repayment of such loan or obligation, and reasonable protection to the Corporation." The foregoing would also apply in connection with other R. F. C. loans, such as those to meet maturities or interest, the bill providing for waiving until June 30, 1939, the present requirement that the Interstate Commerce Commission certify that the borrowing road is not in need of reorganization.

Favorable Terms Expected to Stimulate Buying

While opinion among railroad executives is divided regarding the effect on equipment buying, some of the officers who are familiar with equipment conditions believe that favorable loan terms would launch important replacement programs. It is pointed out that although the present freight car supply may appear more than adequate for current traffic, reserves dwindle rapidly with any business upturn; and furthermore, the total inventory is a composite figure representing many types of cars on the railroads as a whole. Buying, on the other hand, will be determined by needs for specific types of equipment on individual roads. While some roads might prefer to repair laid up cars if money for new equipment is the more difficult to obtain, it is the belief of those in a position to know that loans for new equipment on sufficiently liberal terms would result in substantial buying by the carriers, not only of new freight cars but new locomotives and passenger equipment as well.

The bills introduced by Senator Truman and Representative Steagall propose to add to that part of the R. F. C. Act relating to railroads a new section providing that the R. F. C. "notwithstanding any other provisions of law, on such terms, conditions, and restrictions as it may determine, may, with the approval of the Interstate Commerce Commission, (1) to aid in financing the acquisition of rail, shop appliances, rolling stock and other equipment of railroads, purchase the obligations of railroads, or of receivers or trustees thereof, direct or indirect, or guarantee the payment of the principal of,

and/or interest on such obligations, or make loans, to such railroads or to receivers or trustees thereof for the purposes aforesaid, or (2) to aid in the financing of track and equipment maintenance and replacements, of railroads, make loans to railroads."

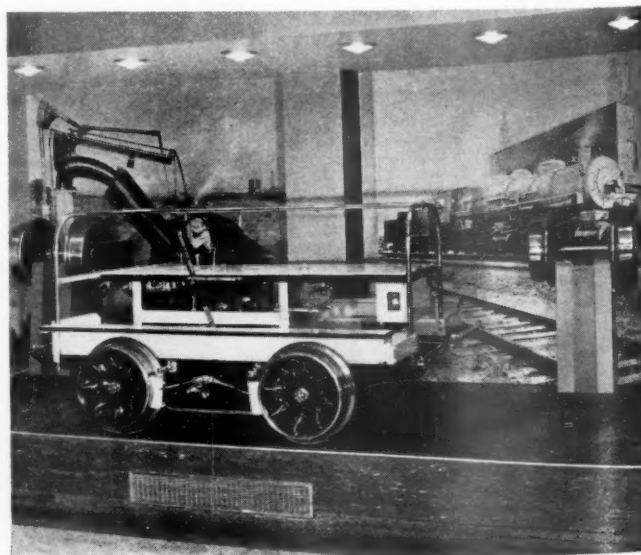
The latter, however, is with the proviso that the railroad borrowing for maintenance work shall agree that at least 75 per cent of the loan shall be used for reemployment of employees furloughed between September 1, 1937, and the bill's enactment date; and the balance for materials "to be used for the track and equipment maintenance and replacements in connection with which such men will be reemployed."

The section dealing with the equipment and work loans closes with the following: "The title of any owner, whether as trustee or otherwise, to any property leased or conditionally sold to a railroad, in the financing of which the Corporation has aided, and any right of any such owner to take possession of such property in compliance with the provisions of any such lease or conditional sales contract, shall not be affected by the provisions of section 77 of the Act of July 1, 1898, entitled 'An Act to establish a uniform system of bankruptcy throughout the United States,' as amended; nor shall there be affected by the provisions of said section 77 the title of any owner of a collateral note evidencing a loan to a railroad heretofore or hereafter made by the Corporation, and the right of any such owner to acquire title to the collateral securing such note, free and clear of any equity of redemption, in compliance with the terms of the pledge of such collateral."

Meanwhile the House committee on interstate and foreign commerce last week took a step toward the creation of a single federal agency to handle all transport matters, as suggested by President Roosevelt in his recent railroad message. In reporting the bill for the regulation of civil aeronautics, it provided that the separate regulatory agency set up might later be absorbed by a general transport authority.

The Pettengill bill for repeal of the long-and-short-haul clause of the Interstate Commerce Act's fourth section had not, when this issue went to press, been reported by the Senate committee on interstate commerce, which last week voted to make a favorable report. It is understood that there has been some delay in the preparation of the majority report on the measure.

* * *



Part of the Display Installed by Fairbanks, Morse & Co. on the First Floor of its New Quarters in Chicago

Station Facilities Must Keep Pace With Modernized Train Service

A. R. E. A. report points out factors having an influence, and improvements which are being made



Two of the Nine Moving Stairways
at Pennsylvania Station, New York

WHAT influences have the changing factors in railway passenger service of the last 10 or 15 years had upon the character and arrangement of passenger station facilities, and what are the latest trends in passenger station design developed to meet these new influences? These questions, which are of more or less importance to every road in the country, were answered in a report prepared by the Committee on Yards and Terminals of the American Railway Engineering Association and presented before the convention of the association in March.

The committee based its report on answers to a questionnaire addressed to the engineering officers in charge of the 48 passenger stations concerning which it had made reports in the past. In this questionnaire, the most important question raised was concerning the changes which have been made in these stations during the last 15 years, or are now contemplated, and the reasons for such changes. Special consideration was also given by the committee to the larger stations which have been built or remodeled extensively during the last 15 years. An abstract of the committee's report follows:

Trends in Passenger Service

The following general trends in passenger service and associated activities have had an influence on passenger station design.

(1) The relative reduction in local, and the increase in long distance travel have resulted in a tendency to reduce and consolidate facilities in the smaller stations and to place increased demands on many of the more important terminals located in the larger cities.

(2) The increased length of trains.

(3) The increased use of automobiles by patrons arriving at and departing from stations.

(4) The greater attention which is being given to the convenience and comfort of patrons in order to attract patronage. This is evidenced principally through the use of air-conditioning and more attractive and convenient appointments in stations.

(5) The desirability of increasing revenue from concessions, and the necessity for reducing expenses.

(6) The tendency to replace trunk baggage with hand baggage.

(7) Faster train schedules.

These, together with other influences which are being felt generally, have resulted in certain trends and some new developments in passenger station design, which have been evidenced in the alterations made in many old stations, and which are dominant in the design of many new stations. The more important of these are as follows:

(1) An increase in the number and kind of concessions. Some of the station facilities, such as restaurants, lunchrooms, parcel checking facilities and toilet rooms, previously operated by the railways, are now, in many cases, being operated by concessionaires. The use of pay-toilet facilities has now become general, and there are now more pay toilets than free toilets in most of the larger stations.

(2) An increase in length of station platforms to accommodate longer trains.

(3) An increase in the use of air-conditioning. This applies not only to the facilities located within station buildings themselves, but also to the provision of facilities along the station tracks and in yards to serve air-conditioned equipment.

(4) The need for ample parking space for buses, taxicabs and private automobiles, with convenient approaches to the station and "short-cut" exits from platforms to auto-loading facilities.

(5) An increase in parcel-checking facilities and a decrease in the facilities used for the handling of heavy baggage. There is a strong tendency to supplement the central parcel checking facility with coin-operated lockers distributed throughout the station.

(6) The increase in mail and parcel post has resulted in a tendency to install mechanical equipment to facilitate handling. In the newer stations where the volume of mail has justified such action, postal substations have been built adjacent to the station so that mail can be

handled between the station and the postal substation by mechanical means. Extensive mail handling equipment has been installed in recent years at North Station, Boston; South Station, Boston; the Chicago Union Station; the Cleveland Union station; the Detroit station of the New York Central; the Kansas City Union station; the Milwaukee station of the Chicago, Milwaukee, St. Paul & Pacific; the Minneapolis station of the Great Northern; the New York station of the Pennsylvania; and the Philadelphia, 30th Street station, of the Pennsylvania. The mail handling facilities provided at the Kansas City Union station were described in the *Railway Age* of August 4, 1934; while those provided at the New York City station of the Pennsylvania were described in the *Railway Age* of February 29, 1936.

(7) An increased use of public address systems for train announcing.

(8) A tendency toward the more elaborate furnishing of waiting rooms to present more of a club-like atmosphere.

(9) The decreased use of exclusive men's smoking rooms.

(10) More attention is being given to the attractiveness of the interiors of stations, with the more frequent use of murals in the decorative scheme. The tendency probably will continue away from the use of extremely high ceilings in waiting rooms and concourses. There is a greater tendency now to protect concourses from the weather and to heat them, to add to the comfort and convenience of patrons, and to make them more available as waiting rooms.

(11) The provision of a larger number of telephone booths in stations and their more general distribution.

(12) Improved track and signal arrangements to permit the faster movement of trains entering or leaving the station, and shorter switching movements.

(13) The use of the electric eye to open and close doors.

(14) The provision of moving stairways (also known as electric stairways and escalators) for through passengers.

The applications of the foregoing trends are so apparent that further comment on them is unnecessary, with the possible exception of the use of the electric eye to open and close doors, and of moving stairways, which have only recently been applied to passenger stations.

Electric Eye Automatic Door Openers

Electric eye automatic door openers are in use at the Pennsylvania's station at New York. Here, four pairs of swinging doors between the passenger concourse and the wide passageway between that concourse and the ticket lobby have been fitted with automatic openers in such a way that two pairs of the doors are made exclusively outbound, while the other two pairs are made exclusively inbound.

The arrangement is simple and efficient. At each single door of each pair of doors equipped with openers, a substantial rail extends along each side of the path to be taken by passengers. The ends of these railings are approximately three feet from the door in both directions. A passenger approaching the door from the proper direction intercepts a ray of light at the end of the railing. This immediately causes the door to swing open away from the passenger so that, by the time the passenger has advanced approximately one pace, the door is wide open.

When the door is open, another ray of light at the far end of the railing strikes a second cell and would cause the door to close if not intercepted. However, by the time the door has swung open wide enough to permit the second ray of light to strike the cell on which it is focused, the passenger has advanced to a point where he intercepts that ray. Furthermore, there is a time relay in the circuit which is so arranged that a perceptible lapse of time occurs after the passenger passes out of the second ray of light until the door starts to close. The effect of this is to permit the passenger and his luggage to be entirely free of the door before it closes.

In the arrangement provided, the door will not close if the first ray of light is intercepted before the time relay in the circuit controlled by the second ray of light has had an opportunity to function. The effect of this is to hold the door open continuously if passengers are uniformly spaced five feet or less apart. For a greater spacing, the door will partly or entirely close between passengers.

Moving Stairways

Moving stairways are in use at the passenger stations of the Pennsylvania at 30th street, Philadelphia, at Newark, N. J., and at New York. At the first two points they were incorporated in the original design, while at the latter point they were built in the existing structure.

At 30th street, Philadelphia, the ultimate plan provides for the operation of all through trains on the lower level, where five passenger platforms are provided. Each platform is connected with the concourse at one point by a wide fixed stairway, and at another point by a moving stairway paralleled by a narrow fixed stairway. Each moving stairway may be started, stopped or reversed from either the platform or the concourse by a station attendant. They are usually operated from the

(Continued on page 806)



Two of the Four Pairs of Electric Eye-Operated Doors at Pennsylvania Station, New York, Made Inoperative in the Open Position During the Summer Months

Announce 15 Per Cent Wage Cut

Loss of revenue and increased operating costs necessitate
payroll reduction of \$250,000,000

MEMBER roads of the Association of American Railroads, at a meeting in Chicago on April 29, voted to serve notice on the 21 labor unions holding contracts with the carriers of a 15 per cent reduction in wages to become effective July 1. On the basis of the present scale the reduction will aggregate \$250,000,000 annually and will affect 927,000 employees.

In addition to the wage reduction, the membership considered freight rate increases and the public relations activities of the association. The question of appealing to the Interstate Commerce Commission for an emergency increase in freight rates is still in the hands of A. F. Cleveland, traffic vice-president, and R. V. Fletcher, general counsel of the A. A. R., who are studying the feasibility of launching such a move. The membership voted to reduce the advertising appropriation of the association practically one-half.

Most Important Action Since Adamson Act

The possible sequence of events that may occur as a result of the demand for reduced wages is considered by some railroad officers to be the most important since the passage of the Adamson act. While the demand of the railroads calls for a reduction in wages, it is felt that other phases of employer-employee relationships can also become involved.

Just what procedure will be followed in considering the demand is difficult to forecast and depends upon the position taken by the brotherhoods. When wage reductions were considered in 1932, the matter was handled on a national scale by representatives appointed by the brotherhoods and the railroads, and because of the facility with which it was handled, the brotherhoods endorsed the procedure, expressing a desire that future negotiations be handled in a similar manner. However, last year, when the operating and non-operating brotherhoods failed to agree upon an increase to be demanded, each acted independently.

The railroads will file notice of their intention before May 14 and the brotherhoods on each railroad have 30 days in which to confer with their managements and accept or reject the proposal. During conferences, the employees of each road may elect to act independently or collectively by geographical groups, or they may decide to act on a national scale as was done in recent cases. Because of the possibility that the controversy will again be handled on a national scale, the railroads have appointed a Carriers' Conference Committee of 15 members, five each from the East, South and the West.

If the conferences should fail to reach an agreement, either side can ask for mediation and call for the aid of a member of the National Mediation Board, or the latter can offer its services. Should mediation before a three-man board fail, the law provides for voluntary arbitration before six arbitrators agreed upon by the employees and the railroads. If either side refuses to arbitrate and the controversy threatens to interfere with the movement of interstate commerce, the president of the United States can appoint a board of arbitration. If

both the employees and their managements agree to arbitrate, the decision of the arbitrators becomes binding on both parties, but if either refuses to agree to arbitration any decision reached by the arbitrators is not binding upon either side.

Loss of Revenue and Increased Operating Costs Cited

In a statement issued by the Association, loss of revenue and increases in operating costs were cited as the basis for the wage reduction. Loss in revenue, the statement said, is due to a decline in traffic, a diversion of traffic to competing forms of transportation, and the inadequacy of the recent rate decision of the Interstate Commerce Commission. Increases in operating costs have resulted from the 1937 wage increases and adjustments, costly and restrictive interpretations placed on working rules by adjustment boards, legislative expenses due to state full-crew and train-limit bills, the cost of continually opposing state and federal legislation, tax expenses due to an increase in municipal, county, state and federal taxes, the Railroad Retirement Act, the Social Security Act and state unemployment taxes, and materials and supplies expense resulting from a general upward swing in manufacturers' prices.

"In the determination of the amount of wage reduction to be sought," the statement continued, "serious consideration was given to the present financial condition of the carriers. This position is even more desperate than it was in January, 1932, when a deduction of 10 per cent in pay checks was accepted voluntarily by the employees. This fact is clearly shown by the following comparison of net railway operating income of the Class I railways for the four-month periods ending, respectively, with January, 1938, and with January, 1932:

Net Railway Operating Income Class I Railways, United States

Month	Amount	Month	Amount
October, 1937	\$60,747,445	October, 1931	\$64,202,244
November	32,440,920	November	36,787,704
December	23,971,525	December	27,618,392
January, 1938	6,919,879	January, 1932	11,182,051
Total	\$126,079,769	Total	\$139,790,391

"In the four months ending with January, 1938, net railway operating income showed a reduction of \$13,710,622, or of 10 per cent, below that earned in the four months ending with January, 1932. Even more significant, however, is the fact that net railway operating income in January, 1938, fell 38 per cent below that of January, 1932.

"The operating ratio of the Class I railways in recent months presents the same story. This operating ratio increased steadily from 72.5 per cent in October, 1937, to 78.35 per cent in November, to 81.03 per cent in December, and to 83.33 per cent in January, 1938. Even more striking, however, is the great reduction which has occurred in the proportion of operating revenues carried through to net railway operating income.

"In October, 1937, net railway operating income

amounted to 16.3 per cent of operating revenues. This proportion declined steadily to 10.2 per cent in November, to 8.6 per cent in December, and, finally to 2.5 per cent in January, 1938. In other words, in that latter month 97.5 per cent of railway operating revenues were consumed in the payment of operating expenses, taxes and rentals. The 2½ cents left out of each dollar of revenues for a return upon property investment represent an earning rate, on an annual basis, of less than

Class I Railways, United States

Month	Operating Revenue	Net Railway Operating Income	Per Cent of Revenue
October, 1937	\$372,925,813	\$60,747,445	16.3
November	318,180,377	32,440,920	10.2
December	300,320,821	25,971,525	8.6
January, 1938	279,258,713	6,919,879	2.5

one-half of one per cent. To repeat, the present financial situation of the carriers is even worse than that which resulted, in 1932, in the 10 per cent wage deduction agreement.

"Because of the critical financial position of the railways at the beginning of 1932 (a situation less desperate than at present), the employees agreed, in January of that year, to a wage deduction of 10 per cent. In other words, the index of hourly wage payments, effective February 1, 1932, was reduced from 100 to 90. Through a gradual restoration of the deduction this index was raised from 90 to 92.5 on July 1, 1934, to 95.0 on January 1, 1935, and back to 100 on April 1, 1935. The wage increases granted in 1937 had the effect of raising this index to substantially 108, a figure 8 per cent higher than that in effect immediately prior to the wage reduction, and 20 per cent higher than that in effect during the complete deduction period."

Disclosure of the plans of railroads to proceed with this move was met almost immediately with statements by labor leaders, who promised resistance. George M. Harrison, chairman of the Railway Labor Executives Association, declared the wage cut would reduce purchasing power in the face of President Roosevelt's efforts to improve it, making the statement following a White House conference with the President. "The railroad problem is not as acute as many of its representatives are endeavoring to make the public believe," he said. "The relief offered to roads by an increase in freight rates and the program for assistance now being considered is adequate to meet the problems."

At Cleveland, D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen, declared the unions will not agree to any reduction. "We're paying our price right now," he said, "and if those bondholders who are controlling the railroads will take their losses, we'll be in pretty good shape."

PIPING SYSTEMS.—"Wrought Iron for Piping Systems" is the title of the latest technical bulletin issued by the A. M. Byers Company, Pittsburgh, Pa. This bulletin discusses the commonly used pipe materials: wrought iron, steel, cast iron, brass and copper, their relative costs, and factors to be considered in the selection of pipe and continues with an explanation of why some metals resist corrosion better than others. It also treats of the actual corrosive conditions to be faced in water supply, drainage, and heating and power systems. The booklet concludes with an appendix containing suggestions for reducing the effects of corrosion, and valuable statistical data on the life of various pipe materials, gathered from soil and vent records of specific installations in buildings in New York and Chicago. Many illustrations of piping systems are included.

Station Facilities Must Keep Pace With Modernized Train Service

(Continued from page 804)

platform up to the concourse, but may be, and occasionally are, operated downward from the concourse to the platform for the benefit of invalids, etc.

The upper level tracks at this station, which are served by three passenger platforms, are intended ultimately for suburban service exclusively. One of the platforms at this level is exclusively an inbound platform. It is connected with the concourse by two wide fixed stairways, and no moving stairway is provided. Each of the other two platforms is joined to the concourse by means of one wide and one narrow fixed stairway and one moving stairway. The moving stairways here are controlled in the same manner as those connecting the concourse with the through passenger platforms. All of the moving stairways at the station are approximately 42 in. wide.

At the new station of the Pennsylvania at Newark,* which was put in service on June 27, 1937, there are 10 moving stairways. From the inbound Hudson and Manhattan Rapid Transit platform at the station, which is at an upper level, a passenger has his choice of: (a) one double-length moving stairway downward through one of the eastbound platforms to the city bus lanes (a distance of about a story and a half); (b) two moving stairways (each of which is made up of two single-length stairways, making a total of four) to the street level; (c) two ramps, one to each of two westbound main line platforms; and (d) three fixed stairways adjoining and parallel to the moving stairways mentioned in (a) and (b). From the street level, outbound passengers have their choice of fixed or moving stairways up to both westbound main line platforms, and to two eastbound main line platforms. A separate moving stairway is provided for the use of Hudson and Manhattan passengers to one of the eastbound platforms.

At Pennsylvania station, New York, five moving stairways have been installed, leading from the passenger platforms to the inbound passenger concourse. Each of the five platforms serves two tracks ordinarily used by arriving main line trains. In addition, two moving stairways have been installed from the inbound passenger concourse up to the outbound passenger concourse, the latter of which is on the principal floor level of the station.

From the ticket lobby to the passageway leading toward the 7th Avenue entrance to the station, two moving stairways have been installed, side by side. A feature of this installation is the fact that both stairways operate upward during the morning rush period, at which time the preponderance of traffic at this particular point is upward. At some such time as mid-morning, one of these moving stairways is reversed to operate downward for the remainder of the day. It has been observed that approximately 90 per cent of the people passing between the ticket lobby and the 7th Avenue thoroughfare use the upward moving stairway in preference to the adjoining stairs, and that approximately 75 per cent of the persons moving downward use the moving stairway in preference to the adjoining fixed stairs.

It is reported by an officer of the Pennsylvania that there has been no increase in the number or severity of accidents by reason of the substitution of moving stairways for fixed stairs, either by people carrying luggage or otherwise.

* This station was described in issues of the *Railway Age* of March 30, 1935, and June 26, 1937.

Rail-Highway Regulation Trends

Specific decisions show attitude of various commissions on co-ordination of services

IN a brief filed recently with the California Railroad Commission, the Atchison, Topeka & Santa Fe introduced several decisions dealing with rail-highway co-ordination. The positions taken by various commissions in these decisions are pertinent in this period of expanding rail-highway co-ordination, and the cases cited, involving important precedents in some instances, are referred to below.

In a case brought by the Chicago & Joliet Transportation Company, et al., (Ill.) P. U. R. 1928E, 481, several applicants applied for bus certificates to operate over two routes between Chicago and East St. Louis. As to one route, the Illinois Commerce Commission decided that no further service was necessary. On the other route, where two of the applicants were subsidiaries of railroads and the others independent operators, the commission granted the applications of the two railroad subsidiaries because of the benefits possible from co-ordinated service, and denied the applications of the independent operators. It said:

"Practical operating and managerial benefits from the operation of buses by railroads or electric lines are many. Men experienced in the transportation problems of the territory affected are available. Stations are maintained in nearly all of the communities served. The station agents of these carriers are residents of the respective towns served and are in touch with the transportation needs of their respective communities. Facilities for the storage, handling and transfer of baggage are already available at practically all of the points on their lines. They are possessed of their own telegraph or commercial telephone lines, which are available for this bus service, and which may be used without interfering with rail operations. Throughout this territory these companies have a large force of employees of all classes, from transportation experts to section crews, who are available for service. No independent company would acquire such complete equipment without a prohibitive investment, and without such equipment no independent company could render the economical and efficient service that the companies now engaged in the transportation business would be able to render."

New England Case

In another case instituted by Interstate Passenger Service, et al., 9 P. U. R. (N. S.) 322, the New Hampshire Public Service Commission reversed its prior policy and granted a certificate to a bus subsidiary of the Boston & Maine, while denying certificates to two independent applicants who proposed to serve the same territory. In 1925, the commission had denied a similar application by the now successful applicant. In reversing its former policy, the commission, quoting from a prior decision, said:

"It is as difficult now to forecast the developments and necessities of future transportation as it was in 1926. Changes in technology and public preference or demand may eventually lead to further substitution of highway for rail service. If the time comes when such

transition appears to be in the public interest, justice would require that the agency once refused on grounds set forth above be given first consideration. Nor does this principle rest upon equity alone; unless such a policy is followed it will manifestly be impossible to secure that co-ordination or correlation of means of transport—each being utilized where it can best and most efficiently meet the need—which is essential to the economic well-being of the people of the state."

Oklahoma Decision

In action brought by the Oklahoma Railway Company, et al., P. U. R. 1929D, 603, the railway company filed an application for a certificate to operate a bus service co-ordinated with its existing rail service between Norman and Oklahoma City. A prior applicant had proposed to render bus service in the same territory. The Oklahoma Corporation Commission, in granting the railroad's application and denying the bus operator's application, despite the priority in filing, said:

"Bus travel at present is popular with certain people and there is a substantial part of the traveling public which prefer and demand bus service. This situation exists with reference to travel between Norman and Oklahoma City, as is shown by the proof of all parties, and for that reason the public convenience and necessity require that such service be given, subject to the same being co-ordinated with the service rendered by the applicant railway company and subject to said service being rendered by the applicant in order to prevent destruction of the rail line which would discommode and work to the disadvantage and not to the convenience of the public, as well as the shippers and travelers. Likewise, for the reasons stated, the public convenience and necessity do not demand nor would they be served by a strictly independent bus service."

Pennsylvania Co-Ordination Authorized

In a case involving the Wyoming Valley Auto-Bus Company, P. U. R. 1925D, 332, an independent bus operator, who had been granted a temporary certificate, and a bus subsidiary of a rail company each sought certificates. The Pennsylvania commission, in refusing to renew the independent operator's certificate and in granting the certificate to the subsidiary bus company, the service of which was to be co-ordinated with that of its parent company, said:

"The commission has on repeated occasions pointed out the advantages to the public accruing from the operation of bus lines as auxiliaries to railway systems. They can give organized and co-ordinated service to the public over wide areas not possible to be served by railway extensions; their schedules can be arranged to the best possible advantage for interchange of service; their fares can be kept at a minimum by the arrangement of reasonable transfer privileges; and numerous other benefits to the public accrue from unified operation."

In a case brought by the Missouri Pacific Railroad

Company, Case No. T-5256, Public Service Commission of Missouri, April 7, 1937, the Missouri Pacific sought authority to operate a truck service between Jefferson City, Mo., and Independence over two routes, the service to be co-ordinated with the applicant's rail operations. A number of competing trucking operators protested. The commission, in granting the application, said:

"The motor carrier field is practically new when compared with the operations of applicants. Long before Haynes and Ford and other pioneer motor manufacturers set the wheels of motor vehicles upon the highways, the applicants were serving these many towns and villages. For over 60 or 70 years, the applicants have carried on and no doubt have transported the grandparents, the fathers and mothers of many of these protestants, the freight and commodities of their ancestors long before the motor vehicle was dreamed of. The applicant is a vital part of the transportation scheme of our state. Its stock and bonds have been sources of investment for thousands of our people and its taxes have helped carry the burden of advancing civilization and modern conditions. The applicant cannot go backward. It cannot stand still. It must progress with every new generation. All this assists us to reason that the applicant is not a new carrier in the field in the sense of competition. It is in a strict sense a co-ordination of service which should be permitted, as the applicant, by the proposed co-ordinated and joint service, is attempting to afford to the shipping public and make available a more expedited form of transportation service for shipments moving both in intrastate and interstate commerce."

Two Reading Cases

In action instituted by the Reading Transportation Company, P. U. R. 1927E, 632, the applicant, a subsidiary of the Reading Company, petitioned for approval of its incorporation, stating that one of its objects was to co-ordinate its bus service with the rail service of the parent company. The Pennsylvania commission, in granting the petition, explained its approval of this feature of the objects of incorporation, saying:

"It has been established that present needs of the public for transportation can best be served by the continued existence of railroads and the operation of motor vehicles in connection with or in co-ordination with the rail carriers."

In the subsequent case of the Reading Transportation Company, Application Docket No. 16085, the same company applied for removal of a restriction as to local traffic in Pennsylvania on its Philadelphia-New York operation, and for authority to institute a bus service supplementary to that of its parent company and competitive with that of an existing bus operator. In granting the application the commission specifically held that the advantages of the co-ordinated service were sufficiently great to warrant departure from the general rule of refusing to permit competition in the bus field, saying:

"The Reading Company has operated trains through this territory for a long period of time. There can be no reasonable objection to the electrification of its lines or the increase in the amount of service which it renders. If it is desired to operate trains on a half-hourly schedule throughout the entire day, the protestants would have no reason to object. The proposed plan of operating buses between the points on the highway nearest the railroad stations will have no different result."

"Although the commission does not, as a matter of general policy, favor the beginning of competition between bus companies where it will adversely affect the service to the public, that policy does not apply in this

case. The Reading Company was serving this territory with its rail lines long before the protestant company was organized. The proposed service is merely a supplement to the rail service and will be no different in effect from that which the railroad company could install on its rail line."

Railway Buying—First Quarter

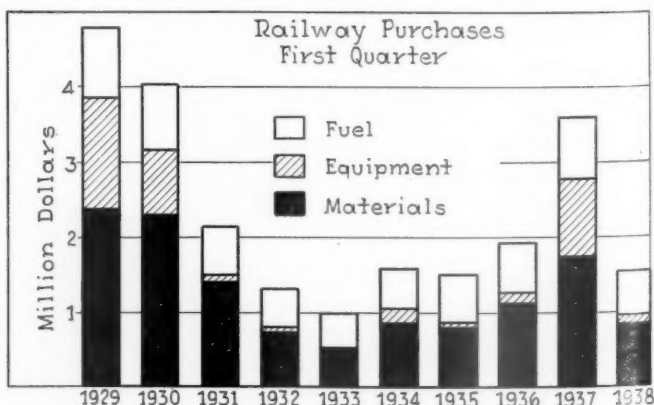
WITH reports available for the month of March from 26 railroads and revised figures for January and February, it is estimated that the materials, equipment and fuel purchased by the railroads during the first three months of this year totaled approximately \$155,078,000—a reduction of \$205,108,000, or 56 per cent, from the first quarter of 1937, and only about \$55,000,000 above the total in the first three months of 1933 when purchasing was at its lowest.

Railway Purchases					
	Fuel (000)	Rail (000)	Cross- ties (000)	Other material (000)	Total (000)
January, 1938	\$21,889	\$1,382	\$3,965	\$26,020	\$53,256
February, 1938	20,002	2,022	3,643	21,403	47,070
March, 1938	18,163	1,500	3,800	21,082	44,545
March, 1937	30,644	6,224	4,985	55,942	97,795

	Materials* received from manu- facturers (000)	Equipment ordered from manu- facturers (000)	Total from manu- facturers (000)	Fuel (000)	Total including fuel (000)
1929.....	\$237,397	\$150,266	\$387,663	\$91,703	\$479,366
1930.....	232,690	83,845	316,535	87,310	403,845
1931.....	141,881	8,343	150,224	66,119	216,343
1932.....	76,700	1,684	78,384	53,700	132,084
1933.....	54,764	334	55,098	45,409	100,507
1934.....	86,214	17,415	103,629	55,447	159,076
1935.....	81,050	4,066	85,116	67,350	152,466
1936.....	111,864	13,759	125,623	68,518	194,141
1937.....	173,736	103,424	277,160	83,026	360,186
1938.....	84,817	10,207	95,024	60,054	155,078

* Includes rail and forest products.
Revised to April 30, 1938.

Thirty-nine of 87 railroads from which reports have now been received for February spent more for materials in that month than in January, and 10 railroads made larger purchases in February than in February, 1937. Fourteen of 26 railroads reporting March figures thus far spent more in that month for materials than in Feb-



A Comparison Between the Purchases of Material and Fuel and the Value of Orders Placed on Builders for Locomotives and Cars During the First Three Months of Each Year

ruary, and 3 roads bought more in March than in March, 1937. Reductions, however, were in the majority. The February total, less equipment, as revised, is \$47,070,000 for materials and supplies, including fuel, as compared with \$53,256,000 in January; while the total now indicated for March is \$44,545,000. In March, 1937, the total was \$97,795,000.

Materials received from manufacturers in the first three months totaled approximately \$84,817,000, as compared with \$173,736,000 in the first three months of 1937, and \$111,864,000 in the first quarter of 1936. The value of equipment ordered from builders during the first three months was approximately \$10,207,000, as

compared with \$103,424,000 in the first three months of 1937, and \$13,759,000 in the first quarter of 1936. Purchases of materials and equipment, exclusive of fuel, from manufacturers totaled \$95,024,000 in the first three months of 1938, as compared with \$277,160,000 in the first three months of 1937, and \$125,623,000 in the first three months of 1936.

In 1929, the purchases of materials from manufacturers totaled approximately \$237,397,000; the value of orders for equipment from builders, \$150,266,000; and the combined purchases of materials and equipment from manufacturers, \$387,663,000; while total purchases of materials, equipment and fuel was \$479,366,000.

A Communication . . .

"Civil Engineer's" Rebuttal to Paul Jones

TO THE EDITOR:

Appearing on page 468 of the March 12, issue is a rather dubious reply by Paul Jones to my article which you so kindly published in the January 29 issue, page 245.

Since Mr. Jones has indulged in personalities, I'll relate something of my family background and employment record. It so happens that I am the eldest of five children and of parents of moderate means, who could not afford to give their children college educations, although three of us managed to matriculate from such institutions. In my particular case, I attended prep school before I went to the university and worked after school hours to pay my tuition. When it came time for me to go to the university, I worked during the summers to pay my way.

It would certainly ill become me as the son of a government scientist, who himself has reached his niche in life in spite of many rebuffs received in the "school of experience," to expect to jump ahead of my more experienced superiors. In truth I cannot find anything in my article, which Mr. Jones so blandly castigates, which would warrant the slightest assumption that I am piqued because I have not already been considered for, nay elevated to, the position of general manager, vice-president or even president of my railroad.

I am piqued, however, and justly so, when I realize that twenty-six or more of us were let out of the engineering department of my railroad, principally because, as I pointed out in my original article, the Big Five Brotherhoods foisted upon the railroads and the present National Administration connived previously with the other industrial unions for unwarranted wage increases, which increased my company's expenses to the point where the management was forced to make drastic reductions in much needed forces in order to pare down mountainous expenses. For further justification of my contentions, Mr. Jones is referred to the same issue of the *Railway Age* in which his article appeared, page 440, first column, the last paragraph!

No doubt the following statement will be hard for Mr. Jones to swallow, but I have actually worked as a trackman at 38 cents an hour. But I mustn't get ahead of my story, for I started my railroad career as a chainman on a maintenance of way corps and for two and a half years worked frequently from seven o'clock in the morning until eleven at night for which, possibly unlike Mr. Jones, I received no overtime pay, but that didn't bother me then and doesn't today, for I thoroughly enjoyed my railroad work. When I was furloughed the first time from railroad service in '32, I couldn't get a thing to do for several months (no, not even a "bakery route"), so finally, through my wife-to-be, who was then in railroad service, I found out where there was an extra gang working and hired out in it under a genial old colored foreman. I left the colored foreman's gang, along with seven other furloughed engineers and

worked in a track-ballast mole gang under a regular section foreman. Winter came on, forces were reduced and we were layed off.

For several months more I was without work, but during this period my love for railroading never flagged. About February, '33, I was asked to "pinch hit" for a supervisor of track's motor car boy. Not only did I operate the gasoline motor car, but I acted as supply man and water station attendant, all for the munificent sum of 38 cents an hour. However, I was mighty glad to get the work. When the supervisor's regular boy returned, I was once more out of employment. Things were so bad on the railroad that I had to look elsewhere and the fall of '33 found me in the employ of a government bureau in more or less of an engineering capacity, where I was employed for two years. I resigned from the government to accept a position in the engineering department of the railroad of my former endeavors and for a salary considerably less than I was getting with Uncle Sam.

I left the government in '35 and for the next two years was engaged in railroad construction work at a higher rating than when I entered railroad service back in '29. Things looked pretty good for me in the railroad game this last time, until the labor unions went "beserk" along with the Administration and derailed my hopes once more.

Since my last furlough from railroad service on October 1, 1937, and up until a month ago, I was working in an engineering capacity for a prominent contractor at a higher rate of pay than I was getting on the railroad. By the time this article goes to press I'll be working for an engineering firm. It is very probable, too, that before another month rolls by I may also be back with my old love, the railroad. So, despite the fact that I am a university graduate and a profound "student," by the way, of railroading, I think that I have most conclusively proved, even to Mr. Jones, that I have at "times" worked by the sweat of my brow and that at no time have my positions been handed to me on silver platters.

With all my education, though, in "higher arithmetic," I can't figure out where in my article Mr. Jones could have obtained the least excuse for making the following statement, to wit: "Some of these birds join some union and, when they have more personality, give other people lots of trouble with their rackets—the very item this student seems to be ready to dive into." The thoughts expressed in it just simply do not add up. In the first place the statement is utterly false and in the second place it doesn't even make horse sense.

Persons of Mr. Jones' calibre need not worry as to my ability to carve out a place for myself in life, yes even in the railroad field, although I admit that up until now the task has been rather difficult and at times most discouraging. But I have been a devoted student of railroading long before I was on a railroad payroll; in fact, ever since I could walk, talk and read and I shall never feel satisfied until I reach the top of the ladder.

A FURLOUGHED CIVIL ENGINEER.

NEWS

Midwestern Solons K. O. Ship Subsidy

Coastal politicians' scheme to swipe interior's business is blocked in House

House members from the mid-western and intermountain states staged a revolt in the lower chamber on April 28 when they united their efforts and defeated the intercoastal merchant marine subsidy section of H. R. 10315, the bill introduced by Chairman Bland of the House committee on merchant marine and fisheries to amend the present merchant marine act. Section 30 of the bill which was defeated by a vote of 132 to 27 provided that the government would pay a subsidy of \$2 a gross ton on all intercoastal ships which meet certain requirements as to speed and convertibility into government transports in time of war. Former chairman Kennedy of the Maritime Commission, had suggested that the government might grant this type of subsidy, but President Roosevelt, in a letter to Senator McAdoo, has gone on record as being definitely opposed to it.

Representative Carlson of Kansas led off the opposition by asserting that the proposed legislation would "further force the railroads of this country into bankruptcy." He also pointed out the fact that John Corbett, speaking as a representative of the Brotherhood of Locomotive Engineers, had opposed the subsidy legislation.

The next speaker was Representative Knutson, veteran member from Minnesota, who told his colleagues that "This legislation, if put into operation, would result in forcing the coast lines yet farther away from the Mississippi River, increasing freight rates, which would lose us yet more industries. It must be apparent to all of us that the granting of this subsidy will result in taking yet more business away from the American railroads—the biggest employer of labor in the country, the biggest consumer of raw materials, the biggest single consumer of coal. Notwithstanding the fact that the railroads of the United States, with two or three exceptions, are practically bankrupt, and many in receivership, we have before us a bill that would further complicate their difficulties."

Another voice that was raised in opposition to giving the intercoastal lines a subsidy was that of Representative Short of Missouri. He pointed out that the railroads at the present time receive no subsidy from the government, and went on to say that "they should receive no subsidy."

Mr. Short then said that "there is a limit beyond which we cannot go and not as an enemy but as a staunch friend of the waterways, of flood control, and rivers and harbor development in this country, I want to say one good word for the railroads of this country."

Chairman Bland of Virginia, who introduced the bill, rose to explain to the House that he had no particular interest in Section 30 except that of national defense. He went on to say that the section was included at the request of Congressman Welch of California. Chairman Lea

3 Months N. O. I. Was \$19,276,663

Return of 0.39 per cent compares with \$147,514,808 or 2.95 per cent in 1937

Class I railroads in the first three months of 1938 had a net railway operating income of \$19,276,663 which was at the annual rate of return of 0.39 per cent on their

CLASS I RAILROADS—UNITED STATES Month of March

	1938	1937	1930
Total operating revenues	\$283,078,963	\$377,725,321	\$447,314,318
Total operating expenses	229,064,686	266,198,097	347,107,974
Taxes	28,620,390	31,077,827	29,578,207
Net railway operating income	14,470,444	69,881,244	60,046,885
Operating ratio—per cent	80.92	70.47	77.60
Rate of return on property investment—per cent	0.72	3.50	3.02

Three Months Ended March 31

	1938	1937	1930
Total operating revenues	\$813,334,757	\$1,031,172,599	\$1,316,100,042
Total operating expenses	677,114,056	763,873,756	1,026,147,037
Taxes	84,870,823	87,570,234	86,757,597
Net railway operating income	19,276,663	147,514,808	173,060,112
Operating ratio—per cent	83.25	74.08	77.97
Rate of return on property investment—per cent	0.39	2.95	3.48

of the House committee on interstate and foreign commerce, made a brief statement in support of the controversial section in which he pointed out that former chairman Kennedy had been in favor of such a provision.

Other members of the House speaking in opposition to Section 30 of the bill included Representatives Coffee of Nebraska, Murdock of Arizona, Crawford of Michigan, Thurston of Iowa, Hope of Kansas, O'Malley of Wisconsin, Withrow of Wisconsin, Rees of Kansas, and Harrington of Iowa.

Phelps Addresses Realty Group

W. E. Phelps, special engineer in the land and tax department of the New York Central, addressed the Industrial Real Estate Brokers' Association of New York at its recent monthly meeting in the Advertising Club. Taking as his subject the West Side Improvement project of the New York Central in New York, in which he played an important part, the speaker stressed industrial and transportation developments on the west side area of Manhattan Island since the days of the old Hudson River road and up to the recent completion of efforts to "get the railroad off the streets." His theme was chiefly to point out that industrial properties and railroad facilities "grew up together."

property investment, according to the Bureau of Railway Economics of the Association of American Railroads. In the first three months of 1937, the net railway operating income was \$147,514,808 or 2.95 per cent, and in the first three months of 1930, it was \$173,060,112 or 3.48 per cent.

Gross operating revenues for the first three months of 1938 totaled \$813,334,757 compared with \$1,031,172,599 for the same period in 1937, and \$1,316,100,042 in 1930, a decrease of 21.1 below 1937, and 38.2 per cent below 1930. Operating expenses amounted to \$677,114,056 compared with \$763,873,756 in 1937, and \$1,026,147,037 in 1930. Operating expenses for 1938's first quarter were 11.4 per cent less than in the same period of 1937, and 34.0 per cent below 1930.

Class I roads in the first three months of 1938 paid \$84,870,823 in taxes compared with \$87,570,234 in the same period in 1937, and \$86,757,597 in the same period in 1930. For March alone, the tax bill amounted to \$28,620,390, a decrease of \$2,457,437 or 7.9 per cent below March, 1937. Sixty-five Class I roads failed to earn expenses and taxes in this year's first three months, of which 26 were in the Eastern district, 9 in the Southern district and 30 in the Western district.

The March operating income was \$14,470,444 (Continued on page 817)

Pelley Addresses C. of C. Members

Delegates to annual meeting
hear A.A.R. head discuss
"Railway Outlook"

The nation's critical transportation problem can be solved only by the prompt adoption of a public policy which will give each form of transportation a free and fair chance to do the work for which it is best fitted and which it can do at the lowest true cost, according to J. J. Pelley, president of the Association of American Railroads, who described "the railway outlook" to delegates attending the annual meeting of the United States Chamber of Commerce on May 4.

"The immediate difficulties of the railroads," Mr. Pelley said, "are, of course, due to general business conditions and the resulting drastic slump in the volume of railroad traffic. The fundamental difficulties of the railroads, however, are due largely to conditions established by public policies. Railroad traffic has been decreased needlessly by these policies, and without any general economic advantage, by the diversion of traffic to subsidized competitors. Railroad revenues have been reduced because we have had to meet the competition, direct and indirect, of your tax moneys—and ours as well."

"The result is the railroad crisis, with all its depressing effects upon the general activity of business and prosperity of the nation. To relieve that crisis is beyond the power of the railroads themselves, because its causes are beyond their reach. It is a job for public policy, for economic statesmanship, for fair dealing. It is a job which cannot be done unless we are all willing to renounce the idea of getting something for nothing in the way of transportation, at the expense of that vague and unidentified 'other fellow'—the taxpayer—who, most disconcertingly, turns out to be all of us.

"The outlook for the railroads depends, above all, on a policy of fair treatment and equal opportunity, under which every agency of transportation will be free to render its best service at the lowest true cost—such a policy as business men may well support."

Describing the immediate and long-range programs advocated by the railroads as a constructive solution of the transportation problem, Mr. Pelley said:

"This program calls for more freedom for railroads to work out rates, in the light of today's competitive conditions. It calls for an end to the sort of legislation which forces increased costs upon railroads, without corresponding benefit either to them or to the public they serve. It calls for equal policies as to regulation of transport, and equal treatment as to taxation and as to subsidies. The railroads do not advocate subsidies for themselves, but if the policy of granting subsidies to highway, waterway and air transport is to continue, the same sort of treatment should be extended to the railroads.

"In addition, the railroad program

urges immediate action by Congress to repeal the statutes requiring that government traffic be transported at reduced 'land grant' rates in times of peace. It urges the discontinuance of the Federal Barge Lines and the regulation of commercial water carriers. It urges the passage of the Pettengill Bill, to give the railroads more freedom in making rates to meet certain competitive situations. It urges loans to those railroads which may need to be aided through the present crisis, on the basis of prospective earnings, and loans for the purchase of equipment, taking the equipment itself as security. It urges a revision of the rule of rate-making in the Transportation Act, to give greater consideration to the revenue needs of the carriers. Legislation to carry out several of these recommendations has been introduced in Congress, and in some cases is well advanced toward passage."

(Continued on page 817)

February Deficit Was \$44,567,055

Compares with a net loss of
\$4,996,113 for second
1937 month

Class I railroads reported a deficit, after fixed charges and other deductions, of \$44,567,055 in February, 1938, as compared with a February, 1937 deficit of \$4,996,113, according to the Interstate Commerce Commission's monthly compilation of selected income and balance sheet items.

One hundred and five roads reported deficits for February, 1938, and 28 reported net incomes; in February 1937, 73 reported deficits and 60 reported net incomes. The consolidated statement showing the net income of roads having annual operating

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 136 Reports (Form IBS) Representing 141 Steam Railways

(Switching and Terminal Companies Not Included)

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of February	For the month of February	Income Items	For the two months of	For the two months of
1938	1937		1938	1937
*\$2,122,088	\$38,783,616	1. Net railway operating income.....	\$4,810,774	\$77,633,560
10,443,363	11,008,239	2. Other income	23,176,508	23,074,687
8,321,275	49,791,855	3. Total income	27,987,282	100,708,247
1,999,486	1,800,306	4. Miscellaneous deductions from income	4,256,166	3,621,006
6,321,789	47,991,549	5. Income available for fixed charges.	23,731,116	97,087,241
		6. Fixed charges:		
10,274,546	11,894,485	6-01. Rent for leased roads.....	20,549,480	24,414,517
39,385,887	39,765,084	6-02. Interest deductions	78,758,559	79,611,539
215,836	235,353	6-03. Other deductions	440,894	458,825
49,876,269	51,894,922	6-04. Total fixed charges.....	99,748,933	104,484,881
*43,554,480	*3,903,373	7. Income after fixed charges.....	*76,017,817	*7,397,640
1,012,575	1,092,740	8. Contingent charges	2,025,147	2,100,480
*44,567,055	*4,996,113	9. Net income	*78,042,964	*9,498,120
16,698,464	16,123,428	10. Depreciation (Way and structures,	33,450,474	32,307,727
1,011,759	2,435,972	and Equipment)	2,518,102	4,802,279
12,613,829	16,642,128	11. Federal income taxes.....		
2,583,169	2,579,704	12. Dividend appropriations:		
		12-01. On common stock.....	16,273,588	20,118,354
		12-02. On preferred stock.....	3,268,876	3,265,411
		Selected Asset Items		
		13. Investments in stocks, bonds, etc., other than those of affiliated		
		companies (Total, Account 707).....	\$662,128,590	\$683,789,858
		14. Cash	\$320,878,417	\$516,963,839
		15. Demand loans and deposits.....	4,111,333	7,693,292
		16. Time drafts and deposits.....	28,205,022	44,492,926
		17. Special deposits	63,995,883	162,011,819
		18. Loans and bills receivable.....	3,707,558	2,001,370
		19. Traffic and car-service balances receivable.....	49,761,725	63,675,828
		20. Net balance receivable from agents and conductors.....	42,001,176	56,167,568
		21. Miscellaneous accounts receivable.....	135,318,345	145,806,535
		22. Materials and supplies.....	382,050,487	340,031,566
		23. Interest and dividends receivable.....	23,912,173	26,494,744
		24. Rents receivable	1,315,223	1,760,899
		25. Other current assets.....	4,066,883	6,306,991
		26. Total current assets (items 14 to 25).....	\$1,059,324,225	\$1,373,407,377
		Selected Liability Items		
		27. Funded debt maturing within 6 months†	\$165,949,203	\$201,716,970
		28. Loans and bills payable‡	\$229,217,737	\$211,393,168
		29. Traffic and car-service balances payable.....	67,649,152	85,962,434
		30. Audited accounts and wages payable.....	237,467,645	259,604,937
		31. Miscellaneous accounts payable.....	64,708,491	119,348,541
		32. Interest matured unpaid.....	683,343,357	550,667,544
		33. Dividends matured unpaid.....	2,383,932	1,931,965
		34. Funded debt matured unpaid.....	508,358,094	477,220,214
		35. Unmatured dividends declared.....	15,613,644	15,227,295
		36. Unmatured interest accrued.....	98,371,919	105,509,239
		37. Unmatured rents accrued.....	32,288,610	31,675,251
		38. Other current liabilities.....	18,449,585	26,235,803
		39. Total current liabilities (items 28 to 38).....	\$1,957,852,166	\$1,884,776,391
		40. Tax liability (Account 771):		
		40-01. U. S. Government taxes.....	\$62,050,160	\$126,294,549
		40-02. Other than U. S. Government taxes.....	142,311,585	131,706,451

† Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

‡ Includes obligations which mature not more than 2 years after date of issue.

* Deficit or other reverse items.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE \$25,000,000

Name of railway	(Switching and Terminal Companies Not Included)		Net income before deprec.	
	Net income after deprec.		For the two months of	
	1938	1937	1938	1937
Alton R. R.	\$365,118	\$16,752	\$304,143	\$75,314
Atchison, Topeka & Santa Fe Ry. System†	4,023,529	385,147	2,058,549	2,256,478
Atlantic Coast Line R. R.	1,084,862	1,929,658	1,418,935	2,271,668
Baltimore & Ohio R. R.	5,367,601	803,214	4,147,213	400,989
Boston & Maine R. R.	1,182,945	84,770	912,621	350,659
Central of Georgia Ry.†	649,109	371,372	505,864	240,905
Central R. R. of New Jersey	690,408	617,347	453,753	373,069
Chesapeake & Ohio Ry.	2,063,792	4,042,357	3,449,209	5,411,984
Chicago & Eastern Illinois Ry.†	349,081	75,351	244,966	21,325
Chicago & North Western Ry.†	4,198,031	3,545,499	3,348,779	2,718,147
Chicago, Burlington & Quincy R. R.	1,531,558	204,451	694,549	1,006,017
Chicago Great Western R. R.†	572,133	382,442	482,401	295,094
Chicago, Milwaukee, St. Paul & Pacific R. R.†	4,037,369	2,918,900	3,093,108	2,020,460
Chicago, Rock Island & Pacific Ry.†	2,752,324	2,519,526	2,060,744	1,838,591
Chicago, St. Paul, Minneapolis & Omaha Ry.	640,954	844,375	542,729	745,605
Delaware & Hudson R. R.	526,656	225,297	351,793	47,211
Delaware, Lackawanna & Western R. R.	946,479	335,941	532,822	85,841
Denver & Rio Grande Western R. R.†	1,191,727	804,942	991,479	613,271
Elgin, Joliet & Eastern Ry.	249,405	261,197	81,535	408,620
Erie R. R. (including Chicago & Erie R. R.)§	2,627,246	68,351	1,996,223	567,550
Grand Trunk Western R. R.	1,049,278	378,638	860,076	207,018
Great Northern Ry.	3,605,773	2,821,269	2,984,967	2,217,476
Illinois Central R. R.	399,704	1,720,491	670,119	657,968
Lehigh Valley R. R.	723,327	449,193	355,609	68,322
Long Island R. R.	602,009	684,188	406,536	488,749
Louisville & Nashville R. R.	648,747	188,126	67,777	890,150
Minneapolis, St. Paul & Sault Ste. Marie Ry.†	1,505,282	1,411,194	1,301,155	1,204,552
Missouri-Kansas-Texas Lines	867,479	393,903	649,888	196,926
Missouri Pacific R. R.†	3,006,413	1,754,243	2,270,620	1,025,878
New York Central R. R.†	7,294,907	1,809,457	4,617,571	4,471,822
New York, Chicago & St. Louis R. R.	718,372	511,356	433,705	780,110
New York, New Haven & Hartford R. R.†	2,437,877	547,932	1,875,909	22,926
Norfolk & Western Ry.	1,305,261	4,533,184	2,135,496	5,308,008
Northern Pacific Ry.	2,823,173	1,790,395	2,259,129	1,253,299
Pennsylvania R. R.	3,926,549	2,928,514	76,141	6,891,098
Pere Marquette Ry.	832,610	30,646	394,977	456,737
Pittsburgh & Lake Erie R. R.	92,153	596,086	282,503	881,472
Reading Co.	283,374	929,782	235,782	1,449,793
St. Louis-San Francisco Ry.†	2,787,113	1,487,269	2,266,482	962,907
St. Louis Southwestern Lines†	406,383	257,771	302,519	156,574
Seaboard Air Line Ry.†	1,199,436	441,052	860,815	125,565
Southern Ry.	1,990,139	604,060	1,477,963	1,131,573
Southern Pacific Transportation System||	5,549,295	379,136	4,165,127	1,697,686
Texas & Pacific Ry.	95,493	248,206	103,048	443,130
Union Pacific R. R. (including leased lines).	356,144	29,141	1,595,621	1,133,173
Wabash Ry.†	1,813,284	219,318	1,454,663	134,454
Yazoo & Mississippi Valley R. R.	58,468	127,859	29,344	47,778

† Report of receiver or receivers.

‡ Report of trustee or trustees.

§ Under trusteeship, Erie R. R. only.

|| Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry. and Panhandle & Santa Fe Ry.

† Includes Boston & Albany, lessor to New York Central R. R.

|| Includes Southern Pacific Company, Texas & New Orleans R. R. and leased lines. The report contains the following information: "Income reported hereon excludes offsetting debits and credits for rent for leased roads and equipment and bond interest between companies included herein. Interest on bonds of, and rental income from, separately operated solely controlled affiliated companies, whether earned or not, are included in this statement, in order that such income credits will offset income debits reflected in the net deficit of such companies. Operations of all separately operated solely controlled affiliated companies resulted in a net deficit of \$1,303,364 for the two months ended February 28, 1938, and \$574,177 for the two months ended February 28, 1937, which is not reflected in this statement."

* Deficit.

revenues above \$25,000,000 are given in the accompanying tables.

Hearings Are Held on Dispatchers' Bill

Representative Maloney's subcommittee of the committee on interstate and foreign commerce held a hearing on May 6 on H. R. 4358, the six-hour-day-for-train-dispatchers bill.

Mr. Maloney's subcommittee also decided on May 4 not to report to the full committee the through routes bill, S. 1261. The bill was passed by the Senate at the last session.

"Fan" Meetings

The Railway & Locomotive Historical Society, New York chapter, at its next meeting, to be held in the Engineering Societies building, New York City, on May 13, will have opportunity to see five reels of an "ancient" motion picture melodrama entitled "The Lost Express." As advertised, the motion picture "is guaranteed free from streamlined engines and cars and is replete with 1912 equipment; the cars

are warranted to be non-air-conditioned."

Railroad Enthusiasts, Inc., Philadelphia division, will hold its second annual banquet on May 13, in a Reading dining car in the Reading Terminal, Philadelphia, Pa. At the meeting following the banquet, to be held in room 463 of the terminal building, Edward Lee, of the Hamburg-American Line, will present an address entitled "They do it Differently in England and Ireland." A sound motion picture film, presented by the Philadelphia Rapid Transit Company, will follow.

"Fan" Trip to Cover O. & W. and Lackawanna

The New York, Ontario & Western, in co-operation with the Delaware, Lackawanna & Western, will operate a triangular railroad fans' train trip on May 15 out of New York. Leaving the Weehawken, N. J., terminal of the West Shore and Ontario & Western roads at 8:55 a. m. (D. S. T.), the party will travel along the valley of the Hudson and through the lower Catskills to Norwich, N. Y. There they will transfer to the Lackawanna and

run down the Chenango Valley to Binghamton, N. Y., thence to Hoboken, N. J., via the Lackawanna's main line through the Poconos and across New Jersey. Stops will be made at the Middletown shops of the Ontario & Western, at Cadonia, N. Y., and the East Binghamton yards of the Lackawanna. Railroad Enthusiasts, Inc., the Railway & Locomotive Historical Society and The Railroad Magazine are the sponsors.

Ex Parte 123 Increases on Grain

Railroads in Western territory have asked the Interstate Commerce Commission to modify its Ex Parte 123 decision so as to authorize what are described as desired equalizations of rates on grain and grain products. The petition asserts that if the straight percentage increase of five per cent is made applicable on the rates prescribed in Grain and Grain Products Docket 17,000, part 7, "it will materially disturb" the relationship existing prior to March 28, the effective date of the Ex Parte 123 increases.

Status of "Red Caps"

The Interstate Commerce Commission has postponed until June 4 the date for filing exceptions to the proposed report of Examiners Steer and Harris which recommended a finding that "red caps" and other station attendants with similar duties be brought within the term "employee" as defined in the fifth paragraph of the Railway Labor Act's section 1. The date for the filing of replies to exceptions is postponed to June 24.

The proposed report in the case, Ex Parte No. 72 (Sub-No. 1), was reviewed in the *Railway Age* of February 26, page 396.

Canadian Roads in March

In March gross revenues of the Canadian Pacific were \$10,467,978, down \$1,280,140 from last year. Operating expenses were \$91,106 higher than last year, and net operating revenues totaled \$366,647, a decrease of \$1,371,516 from last year. For the first quarter net operating revenues totaled \$1,247,949, down \$2,394,463 from a year ago.

The Canadian National in March earned \$14,611,629 gross, a decrease of \$2,020,352 from last year. Expenses were \$615,708 higher, and the net result was a deficit of \$873,680, as compared with net operating revenues of \$1,762,379 in March of last year. For the quarter the net operating deficit was \$3,731,653, as compared with an operating profit of \$2,317,497 in the first quarter of 1937.

Labor Opposes Dropping Automatic Train Stop System

Five railroad labor brotherhoods have filed with the Interstate Commerce Commission a joint brief in opposition to the petition of the Illinois Central for authority to discontinue automatic train stop and cab signal devices and substitute "modern three-indication color light automatic block signals" on its line between Champaign, Ill., and Branch Junction. The labor organizations are: Brotherhood of Locomo-

tive Engineers; Brotherhood of Locomotive Firemen & Enginemen; Order of Railway Conductors; Brotherhood of Railroad Trainmen; Brotherhood of Railroad Signalmen of America. Their opposition is based on "safety" grounds, the brief asserting that the employees "are unanimous in their testimony that the change would materially reduce safety."

Hudson & Manhattan Settlement Averts Strike

Working through the wee sma' hours of Friday morning, April 27, representatives of the Brotherhood of Railroad Trainmen and the Hudson & Manhattan, an electric line between New York City and New Jersey points, reached an agreement which gave conductors, guards and station men a six per cent pay boost, effective immediately, with the promise of an additional five per cent and two weeks vacation with pay, if and when the road is granted approval for a rate rise now under consideration by the Interstate Commerce Commission. Train service employees, except the motormen, had threatened to strike at 5:00 a. m. on Friday morning, which action was averted by the preliminary wage agreement.

Railway Suppliers Among Industries Benefited by P. W. A.

Industries supplying the railroads are listed among those which a Bureau of Labor Statistics study has found to have benefited "to the extent of almost two billion dollars worth of orders for materials and equipment from past Public Works Administration programs." The study disclosed that "P. W. A. lifted a number of key industries from their depression stagnation."

"In 1934," the statement says, "railroads to which P. W. A. made maintenance or equipment loans placed orders accounting for 48 per cent of the value of all rails produced that year." The detailed tabulation of materials purchased as a result of P. W. A. activity lists: Steel rails, \$22,211,214; rail fastenings, excluding spikes, \$6,322,273; railway switches, \$1,172,802; locomotives, steam, \$6,864,720; locomotives, other than steam, \$11,853,133; freight cars, \$38,820,468; passenger cars, \$3,893,300; mail and express cars, \$429,443.

Eastern Labor Conference Condemns Train Limit Bill Action

Strong condemnation of the action of the House Committee on Interstate and Foreign Commerce in killing the Train Limit bill was expressed by representatives of 30 lodges comprising members of "standard" railroad unions employed by four carriers of the eastern regional area (Pennsylvania, New York Central, Delaware, Lackawanna & Western and Long Island), meeting in New York recently to consider current national legislation. Resolutions were passed in favor of the President's proposed relief spending program and in opposition to "any and all wage cuts," but the most strongly-worded resolutions concerned the defeated federal Train Limit bill and the House committee which voted against "reporting it out." Contending that "this bill

is desirable for reasons of safety, as well as to end some of the speed-up and provide jobs to our brothers," the union representatives resolved to make known "our resentment to those members of Congress who have acted in a manner adverse to our interest."

The conference represented various eastern lodges of shop sheet metal workers, firemen and enginemen, clerks, telegraphers, boiler-makers, blacksmiths, and dining car employees.

Motor Rail Company

Examiner T. Naftalin has recommended in a proposed report that the Interstate Commerce Commission find that the Motor Rail Company's operations by motor vehicles as part of a motor-rail-motor movement are under common control, management or arrangement for a continuous carriage and thus are not within the partial exemption from regulation provided in section 203 of the motor carrier act for services within municipal zones. The examiner also found that the company is entitled to grandfather-clause certificates for operations between New York and Wilmington, Del., and intermediate points; for radial services at New York and Jersey City, N. J.; for pick-up and delivery at Philadelphia and Camden, N. J., and in off-route service between those points and Norristown, Pa.; and pick-up and delivery service at Baltimore, Md., and Washington, D. C.

The rail-highway service involved in Motor Rail Company's operations is that provided over the Pennsylvania with demountable truck bodies which are transferred from highway vehicles to flat cars.

Wheeler Would Continue Probe; Labor Wants I. C. C. Investigated

Senator Bone of Washington, at the request of Senator Wheeler, has introduced in the Senate S. Resolution 273, which would continue Senator Wheeler's subcommittee investigating rail finance during the Seventy-sixth Congress. It is understood that Senator Wheeler plans to use the committee staff to study and draft long-range rail legislation which probably will be introduced at the next session of Congress.

Meanwhile, George M. Harrison, chairman of the Railway Labor Executives Association, has announced that the union officers would demand a Congressional investigation of the Interstate Commerce Commission on the ground that it had "failed to protect the public against the floating of worthless railway securities."

The R. L. E. A. voted approval, Mr. Harrison said, of the resolution to continue the investigation and to extend it to cover the I. C. C.

"We are of the opinion that the commission has not properly discharged its function under the law, because much of the difficulties of the railroads today are due to their unsound and indefensible capital structures," said Mr. Harrison.

"Since 1920 no railroad could issue stocks or bonds without the approval of the Interstate Commerce Commission. This was to protect the public against the floating of worthless securities. One-third of

the railroads are in bankruptcy today, which shows the public was not protected."

Large Wheat Crop Expected

Railroads of the United States this year will be called upon to handle the second largest crop of wheat in the country's history if the shortage of sub-soil moisture and rust now threatening do not reduce the yield. The average of five estimates made May 1 placed the winter wheat crop at 743,000,000 bushels. If the estimate is realized and a normal crop of spring wheat is grown, this season's total yield will fall just short of a billion bushels, which figure has been reached only once before,—in 1915 when the crop amounted to 1,009,000,000 bushels. This estimate is somewhat larger than that made by the United States Department of Agriculture on April 1, when it estimated 725,707,000 bushels of winter wheat for 1938, as compared with 685,102,000 bushels in 1937. The government's estimate, according to the major wheat-producing states is as follows:

State	1937, bushels	1938, bushels
Kansas	158,040,000	174,460,000
Oklahoma	65,462,000	71,508,000
Nebraska	45,654,000	61,373,000
Illinois	45,150,000	40,244,000
Texas	41,690,000	39,862,000
Missouri	41,097,000	37,940,000
California	16,758,000	14,670,000
Iowa	15,688,000	10,292,000
Colorado	11,151,000	9,399,000
New Mexico	2,829,000	4,100,000
Arizona	1,035,000	1,035,000
Totals	444,554,000	464,883,000
United States	685,102,000	725,707,000

Chicago Daily Holds Travel Show

The third annual International Travel Exposition, arranged by the Chicago Daily News, was held in the Stevens Hotel, Chicago, on April 28 to May 1. As in past years, the opening of the exhibit was marked by a special luncheon for representatives of transportation and travel, including the 150 exhibitors who used the 35,000 square feet of display space. Speakers at the luncheon included Hugh W. Siddall, chairman of the Western and Transcontinental Passenger Association, representing the railroads; C. R. Smith, president of the American Airlines, representing aviation; and Edward F. Knight of the French Line, representing the steamship companies.

All forms of transportation and travel were represented in the exhibit, the railroads of the United States and Canada providing 25 exhibits and the German railways, the associated British and Irish State Railways and the Czechoslovak State Railways providing three more. The 26 national parks of the United States were represented, as were the countries of Europe, Egypt, New Zealand, Australia, Mexico, Central and South America, Bermuda and the West Indies.

Special programs, including motion pictures, music and performances by well-known dancing and singing artists, were provided for visitors.

Railroads File Brief in Mitchell Case

The Illinois Central and the Chicago, Rock Island & Pacific have submitted a brief to the Interstate Commerce Commission in the case of Arthur W. Mitchell versus the trustees of the Rock Island

creases under the preceding week, while all commodity classifications except grain showed decreases under last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading			
For Week Ended Saturday, April 23			
Districts	1938	1937	1936
Eastern	111,345	167,426	151,956
Allegheny	97,756	161,229	141,791
Pocahontas	32,174	48,566	46,967
Southern	86,557	109,494	99,456
Northwestern	64,592	111,790	78,293
Central Western	88,913	104,191	94,341
Southwestern	42,430	53,552	53,145
Total Western Districts	195,935	269,533	225,779
Total All Roads	523,767	756,248	665,949
Commodities			
Grain and Grain Products	32,763	27,730	33,106
Live Stock	12,276	14,736	14,032
Coal	75,359	119,536	124,073
Coke	3,845	10,030	7,541
Forest Products	24,162	36,799	32,205
Ore	9,442	54,714	11,098
Merchandise l.c.l.	148,081	170,021	160,803
Miscellaneous	217,839	322,682	283,091
April 23	523,767	756,248	665,949
April 16	537,585	746,523	642,278
April 9	521,978	711,079	621,843
April 2	523,489	721,229	613,581
March 26	572,952	756,416	594,789

Cumulative Total,
16 Weeks ... 8,741,557 11,399,151 9,903,662

In Canada.—Car loadings for the week ended April 23 totaled 43,348 as against 47,146 last year, and 40,188 in the preceding week, according to the statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
April 23, 1938	43,348	20,124
April 16, 1938	40,188	21,029
April 9, 1938	42,938	20,314
April 24, 1937	47,146	30,426
Cumulative Totals for Canada:		
April 23, 1938	707,083	351,299
April 24, 1937	752,000	453,539
April 18, 1936	673,371	370,201

Club Meetings

The Transportation Club of Rochester, N. Y., will hold a dinner on May 19 in the Stafford Country Club, Stafford, N. Y. John C. McMichael, division freight agent of the Pennsylvania, at Indianapolis, Ind., will be the guest of honor. A golf tournament will precede the dinner.

The Canadian Railway Club will hold its next meeting on May 9 in the Windsor Hotel, Montreal, Que. At that time, G. A. McLennan, clerk, Canadian National fruit terminal in Montreal, and winner of the Canadian Railway Club competition for junior employees, will present a paper entitled "Freight Claim Prevention."

The Traffic Club of Newark, N. J., will hold its next forum at the Essex House, Newark. A. C. McIntyre, freight traffic manager, Lehigh Valley, will lead the discussion.

The New England Railroad Club will hold its annual banquet and entertainment on May 10, in the Copley-Plaza Hotel, Boston, Mass. Reservations should be made with William E. Cade, Jr., 683 Atlantic Avenue, Boston.

The Pacific Railway Club will hold its next meeting on May 12 in the Palace hotel, San Francisco, Cal. A. M. Unger, in charge of electric welding development of the Pullman-Standard Car Manufactur-

ing Company, will present a paper entitled "Light Weight Freight and Passenger Cars." Mr. Unger's talk will be illustrated with motion pictures.

I. C. C. Hearing on Northeast Truck Rates Opens at Boston

An investigation into interstate motor truck rates and classifications in all parts of the New England states and specified sections of New Jersey and New York, initiated on its own motion by the Interstate Commerce Commission, division 5, and docketed as Ex Parte MC 22, was opened in hearings at the Hotel Manger, Boston, Mass., on April 29, before Commissioners Eastman and Lee. Truckers and shippers attended in such numbers that the meeting place was transferred for the second session to the auditorium in the State House. The latter proved also to be not large enough, and still more commodious quarters had to be taken in the Public Works building.

It is not yet definitely established what tack the commission's probe is to take; the proceeding appears to be a general investigation of practices and rules, and truck operators, for the most part, held in abeyance any commitments on policy or prophecies. There is good reason to believe, however, that the New England Motor Rate Bureau, Inc., which at present publishes tariffs for New England highway common carriers, will possibly file a petition during the proceeding which will seek a co-ordinated interstate rate structure for the territory, either set or administered by the I. C. C. and obligatory on all common carrier truck operators. Some hold that, in addition, the rate bureau organization and its supporters will move to establish these common carrier rates as minimum charges for contract carriers as well.

The investigation does not cover the transportation of household goods and so-called "automobile caravans."

Recovery Awaits Experimentation's End, Says Houston

Business must make clear the viewpoint that investment of savings in private enterprise and genuine recovery will come only when experimentation in the economic organization of the country is stopped, said George H. Houston, president of the Baldwin Locomotive Works, in reporting on conditions in the capital goods industries at

this week's annual meeting of the Chamber of Commerce of the United States in Washington, D. C. Mr. Houston's report was in the main a development of the foregoing idea, but he did mention the railway equipment situation to make his point that the low state of the durable goods industries is not due to any lack of demand for their products.

"Never in the history of the country has there been such a great obsolescence in the mechanical equipment," he said. "There has never been a time when the actual destruction of capital goods has been so great. I will cite for the sake of illustration railroad motive power. Since 1925 the locomotives of the country have actually been demolished, disposed of, until at the present time the numerical quantity still in existence is only about two-thirds what it was at that time. This has not been due to an increase in the size of the units, because during that period there has been only about 8 per cent of new motive power put in. Over 90 per cent of all the motive power of the country is over ten years old. Nearly two-thirds of it is over 20 years old. Now, gentlemen, that is an extreme condition due to the condition of the railroads, but it is characteristic of many phases of the capital equipment of the country. That condition must be corrected or our mechanical civilization must in time cease to function."

R. E. A. and Eastern Roads Participate in New York Fair "Motorcade"

Both the Eastern Presidents' Conference, representing 26 eastern roads, and the Railway Express Agency entered floats in the travel section of the motorized float parade, or "motorcade," which traveled the streets of New York on April 30 as the main event in the preview activities of the World's Fair of 1939. The float entered by the Eastern railroads carried a large replica of a typical steam locomotive, properly decorated for the occasion.

The Railway Express Agency was represented by a large float 25 ft. wide and 12 ft., 6 in. high. The theme of the exhibit followed the centennial of express service, to be celebrated next year, which was emphasized by large 5-ft. letters which blazoned "1839" at one end of the float and "1939" at the other. The remainder of the float included a large representation of a call card of an express truck driver, an heroic figure of a pony express rider, a wooden replica of a transport plane, and



This "Dummy Engine" Was Entered by the Eastern Roads in the "Motorcade" Preview of the New York World's Fair of 1939

an impressionistic creation of a streamlined locomotive.

Pullman Brief Supports Rate Increase Plea

The Pullman Company has filed with the Interstate Commerce Commission a brief in support of its application for a 10 per cent increase in rates and charges. Taking the same position as did Pullman officers during hearings in connection with the commission's Ex Parte 125 investigation of the petition, the brief argues that the needed additional revenue "can be obtained most satisfactorily and with the least delay or objection through the 10 per cent increase sought and that any adjustment in the relationship of charges should be left for future consideration if the commission, as a result of this investigation, concludes that there should be conformity with the scale described."

The brief had previously asserted that the investigation developed "three characteristics of importance": The urgent need for the additional revenue which would be received from a 10 per cent increase in rates, in order to meet increased costs, has been completely substantiated by the evidence; the amount of increase per passenger is too small to affect the movement of traffic; inquiry initiated by the commission at the first hearing into the bases of sleeping and parlor car rates, fares and charges, and the reasons for the existence

and continuance of departures from a uniform scale have been enlightening in disclosing many facts pertaining to the rate structures.

As to those rates which are below the basic scale the brief goes on to say that the company "does not ignore the real value of as near an approach to a uniform scale as may be possible." It believes, however, that "a finding that all rates below the 7.2-mill scale should be increased to that level would attribute undue efficacy to scale as compared with long-standing rates between important traffic points." Thus the above-mentioned plea for a granting of the petition for the flat 10 per cent boost and leaving until later such other adjustments as the commission may deem necessary.

Fifty Years of N. H. Electric Operation Shown

The New York, New Haven & Hartford, on May 2, celebrated 50 years of electric traction on its lines when it placed on display in Grand Central terminal, New York, eight electric locomotives representing the evolution of electric motive power from the very beginning of its use in line haul service. On one end of the exhibit line was placed the first electric locomotive used for freight service on any railroad in the United States. Built in 1888, the car-like vehicle was operated in pioneer service on the Ansonia, Birmingham &

Derby electric line, which later became part of the New Haven system. At the other end of the line was placed the first of six new streamlined passenger locomotives which the New Haven is receiving from the General Electric Company, each of which has a continuous rating of 3,600 hp.

Following exhibition at Grand Central terminal, the eight units were shown at various points on the main line between New York and New Haven, including Mount Vernon, N. Y., New Rochelle, Stamford, Conn., Bridgeport and New Haven.

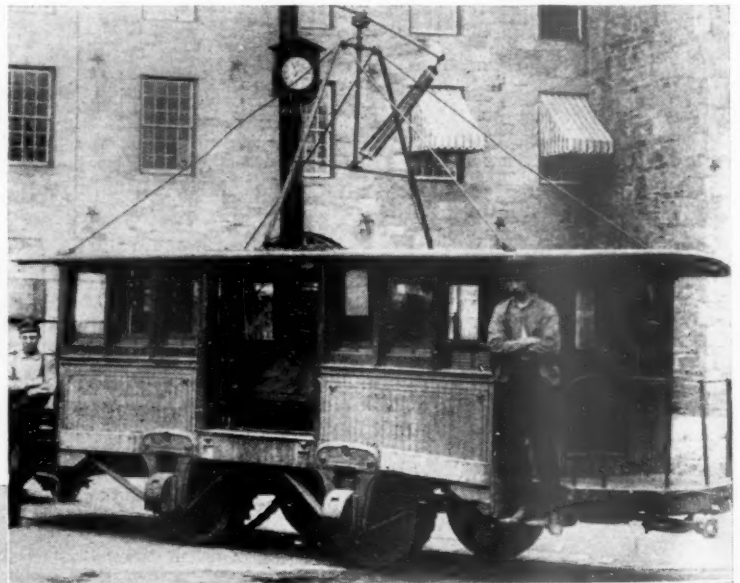
Says N. E. Greyhound Can't Support Acquisitions from N. E. T.

Examiner Frank A. Clifford has recommended in a proposed report that the Interstate Commerce Commission find that the New England Greyhound Lines has not sufficient capitalizable assets to support the proposed issues of securities and assumption of obligation contemplated in its plan for the acquisition of the long-distance bus routes of three New York, New Haven & Hartford affiliates—the New England Transportation Company, Victoria Coach Line, Inc., and Berkshire Motor Coach Lines. Denial of the applications in connection with the financing of the transaction, the examiner says, "necessitates similar disposition" of that seeking authority to take over the operations involved.

New England Greyhound's application

1888 and 1938 Models in Electric Traction on the New Haven

The strange vehicle in the upper corner is America's first electric locomotive for freight service. It was built for the Ansonia, Birmingham & Derby, later absorbed by the New Haven. Below, appears the first of a group of six new high-speed units now being completed for main line service.



which was reviewed in the *Railway Age* of September 4, 1937, page 316, proposed to acquire the long-distance services of the New Haven's affiliates under a plan whereby the railroad would obtain a stock interest in the applicant.

The latter would amount to 10,000 shares and in addition New England Greyhound would assume equipment obligations of \$56,391. The examiner's analysis of the applicant's balance sheet "reveals a capitalization of \$444,045, with carrier-operating property, less depreciation, \$321,365, as the only capitalizable asset, exclusive of any allowance for working capital and intangibles. Therefore, as of July 1, 1937, applicant already would appear to be over-capitalized. The proposed purchase would increase its capitalizable assets \$155,662 and its capitalization \$292,933 by assumption of equipment obligations aggregating \$56,391 and issuance of 10,000 shares of no-par common stock having a stated value of \$236,542."

Giving effect to the proposed acquisitions, the examiner goes on, "applicant as of July 1, 1937, would have capitalizable assets, exclusive of intangibles and any allowance for working capital, aggregating \$447,027 and a capitalization of \$1,049,866. Unless investment in intangibles be included in its capitalizable assets, applicant falls far short of having sufficient of such assets to support the proposed issues of securities." The proposed report closes with citations which make it "apparent . . . that neither prospective earnings nor franchise value (intangibles) have been recognized as proper bases for capitalization."

Pelley Addresses C. of C. Members

(Continued from page 811)

"In addition to what might be called the short-range program," continued Mr. Pelley, "the railroads urge a program for the long pull. They urge greater freedom in the marking of consolidations and co-ordinations, along natural, evolutionary lines, subject, of course, to the approval of the Interstate Commerce Commission. They urge enlargement of the power of the Interstate Commerce Commission over such intrastate rates as affect interstate commerce. They urge amendment of the Railway Labor Act to improve the procedure of the Labor Adjustments Boards, which pass upon and make awards under the contracts between railroads and their employees governing rules and working conditions; and they urge that railroads, as well as employees, be given the right to seek court review of such awards and orders.

"They urge that compensatory tolls be collected for the commercial use of improved navigable waters, other than harbors and the Great Lakes, and that railroads be given the same right to operate vessels on these waters which are accorded to every other citizen. They urge, too, that railroads be given equal rights with others to operate on the highways.

"They urge the repeal of the several acts which authorize various officers of

the government to appear in rate cases against the railroads at public expense. They urge that the present burdensome right of shippers to recover reparation on account of freight charges be limited, particularly by requiring the claimant to show that he has been actually damaged by payment of the alleged excessive rate.

"The separation of grade crossings having become more a matter for improving highway conditions than railroad operations, the railroads urge that these heavy expenditures be borne by government rather than by railroads. For like reasons, they urge that the cost of rebuilding or rearrangement of bridges over navigable streams, as well as their approaches, when made necessary by navigation conditions, should be borne by government rather than by the railroads."

Government-supported "cheap transportation" was analyzed by Mr. Pelley, and in so doing he directed attention to the sponsorship by business men and commercial organizations of many needless and expensive waterway projects.

"The railroads are essential, and their prosperity is essential to national prosperity. They are in sound physical condition, efficient and enterprising in their operations. Their financial structure is less burdensome, relatively, than in the days of railroad prosperity, a generation ago. They cannot do all of our national transportation job, but they must carry the major part of our essential commerce, and they can do it better and more cheaply, on the whole, than can their competitors. Emphatically, their troubles are not due, in any general way, to conditions within the industry itself. The outlook for the railroads depends, above all, on a policy of fair treatment and equal opportunity, under which every agency of transportation will be free to render its best service at the lowest true cost."

3 Months N. O. I. Was \$19,276,663

(Continued from page 810)

470,444 or 0.72 per cent on investment. In March, 1937, it was \$69,881,244 or 3.50 per cent, and in March, 1930, \$60,046,885 or 3.02 per cent. Gross for March amounted to \$283,074,963 compared with \$377,725,321 in March, 1937, and \$447,314,318 in March, 1930; operating expenses totaled \$229,064,686 compared with \$266,198,097 in the same month in 1937, and \$347,107,974 in March, 1930.

Class I roads in the Eastern district for the first three months had a net of \$15,121,042, or 0.63 per cent as compared with \$94,875,754 or 3.98 per cent in 1937, \$97,348,395 or 4.22 per cent in 1930. Gross in the Eastern district for the three months totaled \$388,684,119, a decrease of 26.5 per cent compared with 1937, and a decrease of 41.3 per cent compared with 1930. Operating expenses totaled \$317,832,091, a decrease of 15.4 per cent below the same period in 1937, and a decrease of 37.8 per cent under the first three months of 1930. Class I roads in the Eastern district for

March had a net railway operating income of \$8,445,146 compared with \$43,068,679 in March, 1937, and \$32,182,039 in 1930.

In the Southern district the net for the first three months was \$11,039,118, or 1.32 per cent, as compared with \$22,992,341, or 2.74 per cent in 1937, and \$24,914,286 or 2.85 per cent in 1930. Gross in the Southern district for the first three months in 1938 amounted to \$118,530,272, a decrease of 13.9 per cent compared with the same period in 1937, and a decrease of 33.5 per cent under the same period in 1930. Operating expenses totaled \$92,908,351, a decrease of 6.6 per cent below the same period in 1937, and a decrease of 33.1 per cent under 1930.

Class I railroads in the Southern district for March had a net railway operating income of \$5,111,647 compared with \$11,752,756 in 1937, and \$9,262,673 in 1930.

Class I roads in the Western district for the first three months had an operating deficit of \$6,883,497. For the same three months in 1937, the railroads in that district had a net railway operating income of \$29,646,713 which was at the annual rate of 1.67 per cent, and for the same period in 1930 their net was \$50,797,431 or 2.84 per cent. Gross in the Western district for the three months' period in 1938 amounted to \$306,120,366, a decrease of 16.1 per cent below the same period in 1937, and a decrease of 35.6 per cent under the same period in 1930. Operating expenses totaled \$266,373,614, a decrease of 7.8 per cent compared with the same period in 1937, and a decrease of 29.1 per cent under the same period in 1930.

For March alone, Class I roads in the Western district reported a net of \$913,651 compared with \$15,059,809 in March, 1937, and \$18,602,173 in March, 1930.

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings:

- AIR BRAKE ASSOCIATION.—R. P. Ives, Westinghouse Air Brake Co., 350 Fifth Ave., New York, N. Y.
- ALLIED RAILWAY SUPPLY ASSOCIATION.—J. F. Gettrust, 1108 New Post Office Bldg., Chicago, Ill.
- AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., 327 S. La Salle St., Chicago, Ill.
- AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. P. Soebbing, 1431-B Railway Exchange Bldg., St. Louis, Mo. Annual meeting, October 11-13, 1938, San Francisco, Cal.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—B. D. Branch, C. R. R. of N. J., 143 Liberty St., New York, N. Y.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting June 7-9, 1938, Hotel Stevens, Chicago, Ill.
- AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill.
- AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 10-12, 1938, St. Paul, Minn.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual meeting, October 18-20, 1938, Hotel Stevens, Chicago, Ill.
- AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—E. J. Hoddy (Second Vice-Pres.), Louisville & Nashville R. R., Louisville, Ky.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Engineering Division.—W. S. Lacher, 59 E. Van Buren St., Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. W. Jones, Baltimore & Ohio R. R., Mt. Royal Station, Baltimore, Md. Spring meeting, June 11, 1938, Hotel Netherland Plaza, Cincinnati, O.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M., St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C. Annual meeting, October 17-18, 1938, Chicago, Ill.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York, N. Y. Semi-annual meeting, June 20-24, 1938, Hotel Statler, St. Louis, Mo. Annual meeting, December 5-9, 1938, 29 W. 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 21 Hazel Ave., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Heckler, 292 Madison Ave., New York, N. Y. Annual meeting, September 19-23, 1938, Auditorium, Atlantic City, N. J.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 24-26, 1939, Washington, D. C.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. M. Symes, Vice-President, Transportation Bldg., Washington, D. C.

Operating-Transportation Division.—L. R. Knott, 59 E. Van Buren St., Chicago, Ill.

Transportation Section.—L. R. Knott, 59 E. Van Buren St., Chicago, Ill.

Freight Station Section.—L. R. Knott, 59 E. Van Buren St., Chicago, Ill.

Operating Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y.

Engineering Division.—W. S. Lacher, 59 E. Van Buren St., Chicago, Ill.

Construction and Maintenance Section.—W. S. Lacher, 59 E. Van Buren St., Chicago, Ill.

Electrical Section.—W. S. Lacher, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y.

Mechanical Division.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill.

Electrical Section.—J. A. Andreucetti, 59 E. Van Buren St., Chicago, Ill.

Purchases and Stores Division.—W. J. Farrell, 30 Vesey St., New York, N. Y.

Freight Claims Division.—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill.

Annual meeting, June 7-9, 1938, Chicago, Ill.

Motor Transport Division.—George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division.—E. W. Coughlin, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.

Accounting Division.—E. R. Ford, Transportation Bldg., Washington, D. C.

Treasury Division.—E. R. Ford, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Claim Agent, Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, May 18-20, 1938, Statler Hotel, St. Louis, Mo.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—(See Association of American Railroads.—Mechanical Division.—Electrical Section.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. S. Carlisle, National Lead Company, 900 W. 18th St., Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2271 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT ASSOCIATION OF ST. LOUIS, MO.—J. J. Sheehan, 1101 Missouri Pacific Bldg., St. Louis, Mo. Regular meetings, third Tuesday of each month, except June, July and August, Hotel Mayfair, St. Louis, Mo.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—Frank

Kartheiser, Chief Clerk, Mechanical Dept., C. B. & Q., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO.—Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

EASTERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. T. Bougher, 424 W. 33rd St. (11th floor), New York, N. Y. Next meeting, September 29, 1938, New York, N. Y.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—F. T. James, General Foreman, Delaware, Lackawanna & Western, Kingsland, N. J.

INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 806-808 13th and E Sts., N. W., Washington, D. C. Annual meeting, November 15-18, 1938, New Orleans, La.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. H. White, Room 1826, 208 S. LaSalle St., Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Hotel Touraine, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July, August, September and December, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wolner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, except June at Los Angeles and October at Sacramento.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton, First National Bank Bldg., Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. McC. Price, Allen-Bradley Company, 600 W. Jackson Blvd., Chicago, Ill.

RAILWAY FIRE PROTECTION ASSOCIATION.—P. A. Bissell, 40 Broad St., Boston, Mass. Annual meeting, October 18-19, 1938, Palmer House, Chicago, Ill.

RAILWAY FUEL AND TRAVELING ENGINEERS' ASSOCIATION.—T. Duff Smith, 1255 Old Colony Bldg., Chicago, Ill.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. To meet with Mechanical Division and Purchases and Stores Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R.

RAILWAY TIE ASSOCIATION.—Roy M. Edmonds, 903 Syndicate Trust Bldg., St. Louis, Mo.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual meeting, September 20-22, 1938, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—J. W. O'Neill, Delaware, Lackawanna & Western, Hoboken, N. J. Annual meeting, October 8, 1938, Chicago, Ill.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—D. W. Brantley, C. of Ga. Ry., Savannah, Ga. Next meeting, July 28, 1938, Dixie Sherman Hotel, Panama City, Fla.

TORONTO RAILWAY CLUB.—D. M. George, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—Lewis Thomas, O. & C. Company, 59 E. Van Buren St., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M., St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Supply Trade

Norman C. Naylor, vice-president of the **American Locomotive Company** at Chicago, has been elected also a director.

The Dayton Rubber Manufacturing Company, Dayton, Ohio, now has its Chicago office in the Merchandise Mart building, Chicago.

T. J. Pace, general manager of purchases and traffic of the **Westinghouse Electric & Manufacturing Co.**, Pittsburgh, Pa., has been promoted to assistant to vice-president and has been succeeded by **Andrew H. Phelps**.

Charles B. Rose, acting works manager of the **Baldwin Locomotive Works**, at Eddystone, Pa., has been elected a vice-president, and **Charles D. MacGillivray**, secretary, has been elected a vice-president, and will continue also as secretary, with headquarters at Eddystone.

Andrew H. Phelps, who joined the **Westinghouse Electric & Manufacturing Co.**, Pittsburgh, Pa., on January 1, 1937, has been appointed general manager of purchases and traffic for the company, and **T. J. Pace**, former general manager of purchases and traffic, has been appointed assistant to vice-president, reporting to the vice-president in charge of sales.

The Republic Steel Corporation, Cleveland, Ohio, has appointed the **American Wholesale Hardware Co.**, Long Beach, Cal.; the **Anderson Supply Co.**, Norwich, Conn.; and the **Valley Supply Co.**, Springfield, Mass., jobbers for its tubular products and **Herre Brothers**, Harrisburg, Pa., and the **Sabine Supply Co.**, Orange, Tex., distributors for its iron sheets.

W. Roy Widdoes, assistant to the president of the **By-Products Steel Corporation**, Coatesville, Pa., has been appointed general manager of the organization. Mr. Widdoes was born in January, 1895, at Coatesville, and there attended the high school. He joined the **Lukens Steel Company** in 1912, as a clerk; three years later, he went with the **Reading Company**, but returned to the **Lukens Steel Company** the same year to serve in its purchasing department. In 1929, he was appointed assistant purchasing agent and in May, 1937, joined the **By-Products Steel Corporation** as assistant to president.

TRADE PUBLICATION

RAILWAY AIR CONDITIONING EQUIPMENT.—The **Trane Company**, La Crosse, Wis., has issued Bulletin V258 which is in effect four bulletins in one, dealing with various phases of air conditioning. The first is a 28-page exposition of the Trane system of electro-mechanical air conditioning, primarily for car installations, but also adapted for application in railway buildings. One bulletin covers the convectors used in house heating and said to be "modern successors to the radiator." Another is devoted to multiple-type projection heaters and the last is a general catalog of Trane products.

Equipment and Supplies

April Equipment Orders

Equipment builders received, during April, orders for 3 locomotives, 3 freight cars and 1 passenger-train car, for domestic service. Totals for each category of equipment for the year thus far are thereby

tro-Motive Corporation for use at its Brush Street terminal, Detroit, Mich.

PASSENGER CARS

THE SEABOARD AIR LINE is inquiring for six light-weight coaches and four light-weight baggage and mail cars.

MOTOR VEHICLES

THE SOUTHEASTERN GREYHOUND LINES has ordered from the American Car &

Domestic Equipment Orders Reported in Issues of The Railway Age in April, 1938

LOCOMOTIVES

Date	Name of Company	No.	Type	Builder
April 23	Southwest Missouri	2	Gas-mechanical	Plymouth Locomotive Works
April 30	Warrior River Terminal.....	1	Diesel-electric	American Locomotive Co.

FREIGHT CARS

April 9	Mathieson Alkali Works, Inc.	3	Insulated box	American Car & Foundry
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PASSENGER-TRAIN CARS

April 23	Pullman Company	1	Roomette car	Pullman-Standard
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carried to a total of 39 locomotives, 819 freight cars and 52 passenger cars.

April's locomotive orders were for 2 gas-mechanical locomotives and 1 Diesel-electric, while the single passenger-train car order was for a "roomette" car for Pullman service.

American locomotive builders also received orders for 7 locomotives for export. Canadian manufacturers received orders for 10 locomotives, bringing the total for Canada for the first four months of the year to 35 locomotives. American rolling mills received orders for 43,200 tons of rail for domestic use, bringing the total for the year to 170,665 tons.

Inquiry was made during April for 5,000 freight cars for the Southern. Since the close of the month this company has placed orders for 5,550 freight cars, as reported in this issue under Freight Cars.

FREIGHT CARS

THE BRAZILIAN PORTLAND CEMENT COMPANY has ordered 20 hopper cars of 10 tons' capacity for service in Brazil, from the Magor Car Corporation.

THE SOUTHERN RAILWAY has placed orders for 5,550 freight cars, as follows:

No.	Type	Capacity, tons	Builder
2,000	Box	40	Pullman-Standard
1,000	Box	40	Mt. Vernon
200	Furniture	50	Mt. Vernon
50	M. T. gondola	70	Mt. Vernon
1,250	H. S. gondola	50	Amer. Car & Fdy.
700	L. S. gondola	50	Pressed Steel
250	Stock	40	Ralston Steel
100	Flat	70	Greenville Steel

Inquiry for 5,000 cars was reported in the *Railway Age* of April 23.

LOCOMOTIVES

THE ST. LOUIS & BELLEVILLE contemplates buying two electric locomotives of 130 tons. These locomotives are to be of the B-B swivel truck type.

THE GRAND TRUNK WESTERN has ordered two 100-ton, 600 hp., 8-cylinder Diesel-electric locomotives from the Elec-

Foundry Motors Company 21 motor coaches, powered with Hall-Scott engines.

IRON AND STEEL

THE ERIE is inquiring for 10,000 tons of rails.

Construction

CENTRAL OF NEW JERSEY.—This company has given a contract to Turtur Brothers, Roselle, N. J., for the construction of Elizabethport passenger station, which is being built in connection with the grade crossing elimination work at Elizabethport, N. J. This station will cost about \$141,000.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—This road will reconstruct its Oostaula River bridge, just south of Resaca, Ga. This project involves the replacement of three through Pratt truss spans, totaling 355 ft., with six I-beam spans of ballast deck type and three new concrete piers. The estimated cost of the bridge is \$62,000.

PENNSYLVANIA.—A contract has been given to the Arundel Corporation, Baltimore, Md., for construction of transmission line from Odenton, Md., to Benning, D. C.

THE 17 SCHEDULED AIR LINES operating in continental United States in March carried 94,112 passengers and 558,113 lb. of express, flying 43,548,986 passenger miles and 346,309,637 express pound miles, according to reports received by the Bureau of Air Commerce. In March, 1937, the 20 lines then reporting carried 74,972 passengers and 580,602 lb. of express, flying 34,583,708 passenger miles and 370,819,932 express pound miles.

Financial

ANN ARBOR.—*Annual Report*.—The annual report of this road for the year ended December 31, 1937, shows net deficit, after interest and other charges, of \$151,141, as compared with net deficit of \$25,492 in 1936. Selected items from the income account follow:

	1937*	1936*	Increase or Decrease
Average Mileage Operated	293.86	293.86	.....
RAILWAY OPERATING REVENUES	\$3,920,393	\$3,962,735	-\$42,342
Maintenance of way	334,928	330,914	4,013
Maintenance of equipment	910,704	877,261	33,442
Transportation—Rail	1,704,852	1,677,125	27,726
TOTAL OPERATING EXPENSES	3,238,940	3,178,958	59,981
NET REVENUE FROM OPERATIONS	681,452	783,776	-102,323
Railway tax accruals	226,526	208,743	17,783
Railway operating income	454,926	575,032	-120,106
Net rents	160,860	146,811	14,049
NET RAILWAY OPERATING INCOME	294,065	428,221	-134,155
Non-operating income	21,539	16,017	5,522
TOTAL INCOME	315,605	444,238	-128,633
Rent for leased roads and equipment	32,674	35,104	-2,429
Interest on funded debt	409,900	409,900	.....
TOTAL FIXED CHARGES	456,645	465,733	-9,088
NET DEFICIT	\$151,141	\$25,492	-\$125,648

* Combined Corporate and Receivers' Accounts.

BOSTON & MAINE.—*Abandonment*.—The Interstate Commerce Commission, Division 4, has authorized this company to abandon its so-called Fabian branch extending from Wing Road, N. H., to Base, a distance of 20.1 miles.

CHICAGO, BURLINGTON & QUINCY.—*Bonds*.—This road has applied to the Interstate Commerce Commission for authority to issue and pledge as security for notes \$15,000,000 of first and refunding mortgage 5 per cent (gold) bonds, series C.

CHICAGO & EASTERN ILLINOIS.—*Annual Report*.—The 1937 annual report of this company shows net deficit, after interest and other charges, of \$715,824, as compared with net deficit in 1936 of \$335,389. Selected items from the income account follow:

	1937	1936	Increase or Decrease
Average Mileage Operated	930.30	931.32	-1.02
RAILWAY OPERATING REVENUES	\$16,382,400	\$16,109,107	\$273,292
Maintenance of way	1,948,651	1,776,926	171,725
Maintenance of equipment	2,811,722	2,677,338	134,384

Transportation—Rail	6,297,850	5,902,609	395,240
TOTAL OPERATING EXPENSES	12,530,802	11,751,140	779,662
Operating ratio	76.48	72.94	3.54
NET REVENUE FROM OPERATIONS	3,851,597	4,357,967	-506,369
Railway tax accruals	*895,000	960,000	-65,000
Railway operating income	2,956,597	3,397,967	-441,369
Equipment rents—			
Net Dr.	877,870	923,332	-45,461
Joint facility rents—			
Net Dr.	742,144	816,333	-74,189
NET RAILWAY OPERATING INCOME	1,336,582	1,658,301	-321,718
Non-operating income	251,891	269,595	-17,703
GROSS INCOME	1,588,474	1,927,896	-339,422
Rent for leased roads	155,610	153,728	1,881
Interest on funded debt	1,609,857	1,582,081	27,775
TOTAL DEDUCTIONS FROM GROSS INCOME	2,304,298	2,263,286	41,012
NET INCOME (Deficit)	\$715,824	\$335,389	\$380,434

* Includes a credit of \$224,856.62 covering amounts accrued during 1936 under the Railroad Retirement Act of 1935 subsequently repealed.

CHICAGO, ROCK ISLAND & PACIFIC.—Lease.—Examiner W. J. Schutrumpf of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize the trustees to lease the properties of the Chicago, Rock Island & Gulf.

DENVER & SALT LAKE.—Pledge of Bonds.—This company has asked the Interstate Commerce Commission for authority to pledge \$500,000 of first mortgage four per cent bonds now held in the company's treasury.

ERIE.—Trackage Agreements.—The trustees have applied to the Interstate Commerce Commission for authority to acquire, under trackage agreements, the right to operate over the Susquehanna Connecting extending from Suscon, Pa., to Old Forge, 6.6 miles and the Jermyn No. 2 Breaker Branch connecting therewith at Old Forge, 1.5 miles, and over a portion of the Wilkes-Barre & Eastern extending from Suscon, Pa., to Plains, 8 miles.

FLORIDA EAST COAST.—Extension of RFC Loan Approved.—The Interstate Commerce Commission, Division 4, has approved the extension for a period of not to exceed two years of the time of payment of a loan of \$233,368 to the receivers by the Reconstruction Finance Corporation, maturing May 1, 1938.

HICKORY VALLEY.—Abandonment.—The Interstate Commerce Commission, Division 4, has authorized this company to abandon its entire line extending from a connection with the Pennsylvania at West Hickory, Pa., to Endeavor, 3 miles.

GREAT NORTHERN.—Annual Report.—The 1937 annual report of this company shows net income, after interest and other charges, of \$10,089,920, as compared with net income of \$9,903,986 in 1936. Selected items from the income account follow:

	1937	1936	Increase or Decrease
RAILWAY OPERATING REVENUES	\$94,942,292	\$89,625,105	\$5,317,187
TOTAL OPERATING EXPENSES	61,377,723	56,880,722	4,497,001
Operating ratio	64.65	63.47	1.18
NET REVENUE FROM OPERATIONS	33,564,569	32,744,383	820,186
Railway tax accruals	8,425,163	7,842,526	582,637
Railway operating income	25,139,406	24,901,857	237,549
Equipment rents—			
Net Dr.	965,016	889,029	75,987
Joint facility rents—			
Net Dr.	404,982	453,257	-48,275
NET RAILWAY OPERATING INCOME	23,769,408	23,559,571	209,837
Non-operating income	3,240,382	5,049,169	-1,808,787
GROSS INCOME	27,009,790	28,608,740	-1,598,950
Rent for leased roads	25,530	3,495	22,035
Interest on funded debt	15,571,487	17,298,166	-1,726,679
TOTAL FIXED CHARGES	16,022,964	17,767,536	-1,744,572
NET INCOME	\$10,089,920	\$9,903,986	\$185,934

KANSAS, OKLAHOMA & GULF.—R. F. C. Loan.—This company has applied for Interstate Commerce Commission approval of a \$600,000 loan which it is seeking from the Reconstruction Finance Corporation, for the purpose of purchasing and applying 7,000 tons of rail and other track materials. The work contemplated would cost \$650,000 and the road plans to supply \$50,000 from its treasury. The only security available is \$100,000 of the road's first mortgage bonds, but if R. F. C. requires more the road can offer a second mortgage.

ILLINOIS CENTRAL SYSTEM.—Annual Report.—The 1937 annual report of this road shows net income, after interest and other charges, of \$1,960,315, as compared with net income of \$764,743 in 1936. Selected items from the income account follow:

	1937	1936	Increase or Decrease
Average Mileage Operated	6,565.63	6,581.17	-15.54
RAILWAY OPERATING REVENUES	\$114,015,808	\$114,955,546	-\$939,738
TOTAL OPERATING EXPENSES	84,912,513	85,253,994	-341,481
Operating ratio	74.47	74.16	0.31
NET REVENUE FROM OPERATIONS	29,103,294	29,701,552	-598,257
Railway tax accruals	*8,074,077	†9,131,198	-1,057,121
Railway operating income	21,029,217	20,570,353	458,863

Hire of equipment—Dr.	3,543,526	3,828,753	-285,226
NET RAILWAY OPERATING INCOME	17,881,814	17,115,016	766,798
Non-operating income	967,573	930,554	37,019
GROSS INCOME	18,849,388	18,045,570	803,817
Rent for leased roads	958,723	947,206	11,517
Interest on funded debt	15,536,090	15,846,147	-310,057
TOTAL FIXED CHARGES	16,889,072	17,280,827	-391,754
NET INCOME	\$1,960,315	\$764,743	\$1,195,572

* Includes accrual of Railroad Retirement tax of \$1,473,621 and Federal and State Unemployment Insurance taxes of \$1,093,670.54 for the calendar year 1937, and a credit adjustment of \$1,579,082.90 due to cancellation of 1936 accruals.
† Includes accrual of Railroad Retirement tax of \$1,579,082.90 canceled in 1937.

LOUISVILLE & NASHVILLE.—Annual Report.—The annual report of this company for the year ended December 31, 1937, shows net income, after interest and other charges, of \$7,100,346, as compared with net income of \$9,597,599 in 1936. Selected items from the income account follow:

	1937	1936	Increase or Decrease
Average Mileage Operated	4,941.17	4,986.49	-45.32
RAILWAY OPERATING REVENUES	\$90,194,992	\$91,040,150	-\$845,158
TOTAL OPERATING EXPENSES	68,104,746	65,648,760	2,455,985
NET REVENUE FROM OPERATIONS	22,090,246	25,391,390	-3,301,143
Railway tax accruals	7,716,721	6,626,087	1,090,634
Railway operating income	14,373,524	18,765,302	-4,391,777
Net rents	1,177,596	492,061	685,535
NET RAILWAY OPERATING INCOME	15,551,121	19,257,363	-3,706,242
Non-operating income	1,221,655	915,044	306,611
TOTAL INCOME	16,772,777	20,172,408	-3,399,631
Rent for leased roads	322,660	325,683	-3,022
Interest on funded debt	9,216,025	10,059,162	-843,136
TOTAL FIXED CHARGES	9,576,576	10,423,763	-847,187
NET INCOME	\$7,100,346	\$9,628,472	-\$2,528,125

LEHIGH & NEW ENGLAND.—Abandonment.—This road has applied to the Interstate Commerce Commission for permission to abandon its 5.1-mile Saylorsburg branch, extending from Saylorsburg Junction, Pa., to Saylorsburg.

LOUISIANA SOUTHERN.—Abandonment.—The Interstate Commerce Commission, Division 4, has authorized the receiver to abandon the following lines: the main line extending from Braithwaite, La., to Pointe-a-la-Hache, 28.2 miles, and a branch line extending from Pondras Junction, La., to Reggio, 8.7 miles.

MISSOURI-KANSAS-TEXAS.—INTERNATIONAL GREAT NORTHERN.—Joint Operation.—These companies have applied to the Interstate Commerce Commission for (1) a certificate of public convenience and

necessity in respect of the operation by these companies under operating agreements over the line of the Galveston, Houston & Henderson; (2) for an order authorizing the operation by these companies of the Galveston, Houston & Henderson; and (3) an order authorizing the assumption of liability in respect to securities involved in the transaction.

NORTHERN PACIFIC.—Annual Report.—The 1937 annual report of this company shows net income, after interest and other charges, of \$117,741, as compared with net income of \$1,816,783 in 1936. Selected items from the income account follow:

	1937	1936	Increase or Decrease
Average Mileage Operated	6,725.43	6,727.24	-1.81
RAILWAY OPERATING REVENUES	\$64,851,199	\$61,906,306	\$2,944,893
TOTAL OPERATING EXPENSES	52,011,662	48,318,404	3,693,257
Operating ratio	80.20	78.05	2.15
NET REVENUE FROM OPERATIONS	12,839,537	13,587,901	-748,364
Railway tax accruals	*5,864,826	6,398,983	-534,156
Railway operating income	6,974,710	7,188,917	-214,207
Equipment rents—Net Cr.	1,224,446	1,116,417	108,028
Joint facility rents—Net Cr.	2,451,846	2,482,852	-31,005
NET RAILWAY OPERATING INCOME	10,651,002	10,788,187	-137,184
Non-operating income	4,119,058	5,597,109	-1,478,051
GROSS INCOME	14,770,061	16,385,297	-1,615,235
Rent for leased roads and equipment	50,390	50,148	242
Interest on funded debt	14,354,399	14,256,640	97,759
TOTAL FIXED CHARGES	14,411,673	14,320,079	91,594
NET INCOME	\$117,741	\$1,816,783	-\$1,699,041

PENNSYLVANIA.—Pledge of Stock.—The Interstate Commerce Commission has modified its order of July 10, 1922, so as to permit the Pennsylvania Company to pledge all or any part of 300,000 shares of Pittsburgh, Cincinnati, Chicago & St. Louis stock under its trust indenture dated August 1, 1935, as additional security for an outstanding issue of \$49,000,000 of 28-year four per cent secured bonds.

ST. LOUIS SOUTHWESTERN.—Reorganization.—The Interstate Commerce Commission, Division 4, has approved as reasonable a maximum compensation at the rate of \$8,000 per year to be paid to Carleton S. Hadley, as assistant general counsel for the trustee of this company.

ST. LOUIS SOUTHWESTERN.—Interest payment.—The district court at St. Louis, Mo., on April 25 authorized the trustee of the St. Louis Southwestern to withhold an \$800,000 interest payment due May 1 on a

\$20,000,000 first mortgage bond issue. The indenture of the bond provides for a 90-day period of grace before the interest payment is in default and the court's order permits the trustee to withhold the payment for that length of time.

SOUTH GEORGIA.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$154,000 of first mortgage 20-year 6 per cent bonds to be exchanged for a like amount of 7 per cent cumulative preferred stock; or to be sold at not less than par and the proceeds used to retire the preferred stock.

SOUTHERN.—Abandonment.—The Interstate Commerce Commission, Division 4, has authorized this company to abandon that part of its Atlanta-Fort Valley line extending from a point about 1.5 miles south of Roseland, Ga., to Williamson, 40.1 miles.

SOUTHERN.—Abandonment.—The Interstate Commerce Commission, Division 4, has authorized this company to abandon the operation and the Southern in Kentucky to abandon the line from Burgin Junction, Ky., to Burgin, 3.8 miles.

The commission has also authorized this company to abandon a line extending from Warrenville, S. C., to Clearwater, 5 miles.

SOUTHERN.—Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority to assume liability for \$14,000,000 of four per cent equipment trust certificates, series DD and EE. The series DD will mature in 10 years with serial payments beginning at the end of two years and the EE series will mature in 15 years with payments beginning at the end of two years. The issue will be sold to the Reconstruction Finance Corporation as collateral for a loan of the same amount.

UNION PACIFIC.—Acquisition and Operation.—The Interstate Commerce Commission, Division 4, has authorized the Los Angeles & Salt Lake to acquire the rail properties of the Prince Consolidated Mining Company located in Lincoln County, Nev., 8.7 miles. The commission has also authorized the Union Pacific to operate the line.

VISALIA ELECTRIC.—Abandonment.—The Interstate Commerce Commission, Division 4, has authorized this company to abandon 8.2 miles of track in and adjacent to San Jose, Calif.

WESTERN PACIFIC.—Annual Report.—The 1937 annual report of this company shows net deficit, after interest and other charges, of \$3,450,964, as compared with net deficit of \$2,421,133 in 1936. Selected items from the income account follow:

	1937	1936	Increase or Decrease
Average Mileage Operated	*1,851.57	1,794.12	*57.45
RAILWAY OPERATING REVENUES	\$16,310,973	\$14,959,900	\$1,351,072
TOTAL OPERATING EXPENSES	15,311,708	12,886,815	2,424,893

Operating ratio	93.87	86.14	7.73
NET REVENUE FROM OPERATIONS	999,264	2,073,084	-1,073,820
Railway tax accruals	772,074	948,609	176,535
Railway operating income	227,189	1,124,474	-897,284
Equipment rents—Net	1,189,324	1,149,639	-39,685
Joint facility rents—Net	157,041	137,149	19,891
NET RAILWAY OPERATING INCOME	(Def.) 805,093	111,984	-917,078
Total income	†316,738	†1,233,757	-917,018
Interest on funded debt	3,241,093	3,268,455	-27,362
TOTAL DEDUCTIONS FROM GROSS INCOME	3,767,703	3,654,890	112,812
NET INCOME (Deficit)	\$3,450,964	\$2,421,133	-\$1,029,830

* An increase of 57.45 miles of yard tracks and sidings is due principally to including for the first time 54.98 miles of track within the paired track territory in Nevada, owned by the Southern Pacific Co. and operated jointly with this company.

† Includes interest, accrued on obligations of Sacramento Northern Ry. and Deep Creek R. R. Co., which has not been collected, as follows: 1937, \$688,674.89; 1936, \$674,417.50.

WESTERN MARYLAND.—Annual Report.—The 1937 annual report of this company shows net income, after interest and other charges, of \$1,803,137, as compared with net income of \$1,710,113 in 1936. Selected items from the income account follow:

	1937	1936	Increase or Decrease
RAILWAY OPERATING REVENUES	\$17,626,269	\$16,298,270	\$1,327,998
TOTAL OPERATING EXPENSES	11,578,421	10,464,046	1,114,374
Operating ratio	65.69	64.20	1.49
NET REVENUE FROM OPERATIONS	6,047,847	5,834,223	213,623
Railway tax accruals	1,307,371	1,198,428	108,942
Railway operating income	4,740,476	4,635,795	104,681
Hire of Equipment—Net	257,783	312,043	-54,260
Joint facility rents—Net Dr.	157,437	163,622	-6,185
NET RAILWAY OPERATING INCOME	4,840,821	4,784,216	56,605
Non-operating income	110,954	82,270	28,683
GROSS INCOME	4,951,775	4,866,486	85,289
Rent for leased roads	61,022	59,369	1,652
Interest on funded debt	2,668,920	2,697,648	-28,728
TOTAL DEDUCTIONS FROM GROSS INCOME	3,148,638	3,156,373	-7,734
NET INCOME	\$1,803,137	\$1,710,113	\$93,023

Average Prices of Stocks and Bonds

	May 3	Last week	Last year
Average price of 20 representative railway stocks..	22.78	22.87	57.46
Average price of 20 representative railway bonds..	55.24	55.30	81.19

Railway Officers

EXECUTIVE

C. G. Bowker, vice-president of the Detroit & Toledo Shore Line, has been elected president to succeed **W. L. Ross**, who in turn becomes vice-president to succeed Mr. Bowker. These appointments have been made pursuant to the practice of rotating the presidency of the D. & T. S. L. between Mr. Bowker and Mr. Ross. The former is also vice-president and general manager of the Grand Trunk Western.

J. R. Kearney, assistant to vice-president of operation and maintenance of the Baltimore & Ohio, with headquarters at Baltimore, Md., has retired, effective April 30, after 62 consecutive years of railroad service. Mr. Kearney was born on March 29, 1859, at Altoona, Pa., and after attending the public schools in that city, he entered the service of the Pennsylvania as a car record clerk. He later served on the Illinois Central, the Illinois Midland and the Great Northern before going with the Baltimore & Ohio on May 1, 1899, as superintendent of car service. On September 20, 1910, Mr. Kearney became superintendent of transportation; on July 1, 1914, he was appointed general superintendent of transportation; and was advanced to assistant to vice-president of operation and maintenance on October 1, 1917.

FINANCIAL, LEGAL AND ACCOUNTING

Frank J. Klein has been appointed right of way and land commissioner of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., to succeed **Charles A. Leggo**, who has retired as assistant secretary and right of way commissioner after 44 years of service with the Omaha.

J. L. Montgomery, assistant auditor of the Union Railroad, with headquarters at Pittsburgh, Pa., has been elected auditor and general freight agent of this company and the Youngstown & Northern and the Etna & Montrose, to succeed **George E. Campbell**, who has retired, after 42 years of service.

E. B. Kysh, assistant supervisor of wages of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Houston, Tex., has been promoted to supervisor of wages, with office at the same point, succeeding **J. D. Kinsler**, whose promotion to superintendent of the San Antonio division was noted in the March 19 issue of the *Railway Age*.

W. C. Roberts, auditor of payrolls for the Central region of the Canadian National, has been appointed regional auditor, Atlantic region, with headquarters at Moncton, N. B., succeeding **G. N. Palmer**, who retired recently after many years of service. **B. W. Cummings**, auditor of

disbursements, has been appointed joint facilities accountant at Toronto and **T. H. Walsh**, assistant to the comptroller of the Atlantic region, has been appointed assistant regional auditor at Moncton.

OPERATING

J. A. McCaghey, special representative, transportation department, Baltimore & Ohio, has retired, effective April 30, after 57 years of service with this road.

R. L. Brown, trainmaster on the Denver & Rio Grande Western, with headquarters at Salt Lake City, Utah, has been promoted to assistant superintendent of the Pueblo division, with headquarters at Pueblo, Col., succeeding **L. T. Wright**, trainmaster at that point, who has been transferred to Grand Junction, Col., succeeding **E. H. Blackwell**. Mr. Blackwell has been transferred to Glenwood Springs, Col., succeeding **K. L. Moriarity**, who has been transferred to Helper, Utah, succeeding **J. R. Loftis**. Mr. Loftis has in turn been transferred to Salt Lake City to succeed Mr. Brown.

Joseph J. Rhoads, assistant to general superintendent of the Northern division of the Pennsylvania, with headquarters at Oil City, Pa., has been retired, at his own request, after more than 49 years of continuous service. Mr. Rhoads was born at Bellefonte, Pa., on August 23, 1868, and was educated at Swarthmore College (B. S. in engineering, 1888). He entered the service of the Pennsylvania as a rodman in 1889, serving successively as assistant engineer of construction, assistant supervisor, supervisor, division engineer, division superintendent and assistant to general superintendent holding the latter position since 1930.

TRAFFIC

Homer S. Gray, assistant general passenger agent of the Illinois Central, at Chicago, retired on May 1 after 49 years of railroad service.

R. C. Riedinger, formerly general agent, American Refrigerator Transit Co., at Chicago, has been appointed assistant general freight agent of the Wabash in Chicago, succeeding **G. C. Knickerbocker**, who has been transferred to Buffalo, N. Y., as assistant general freight agent, replacing **J. J. Mossman**, deceased.

Z. P. Hawkins, whose promotion to assistant traffic manager of the Columbus & Greenville, with headquarters at Winona, Miss., was reported in the April 30 issue of the *Railway Age*, was born on January 3, 1896, at Vardaman, Miss. Mr. Hawkins began his railroad service with the Mobile & Ohio as relief operator at Muldon, Miss., and from January 1, 1915, until December, 1917, he served in various clerical capacities, leaving the M. & O. at this time to join the U. S. Navy. He was discharged from the Navy in July, 1919, as radio operator, 1st class, and returned to the M. & O. at Okolona, Miss., as a clerk. He worked in various positions in the clerical department and on January 1, 1920,

he was promoted to the position of rate and bill clerk in the agent's office at Columbus, Miss. On July 1, 1922, Mr. Hawkins left the M. & O. to become quotation clerk for the Columbus & Greenville at Winona, Miss. He advanced rapidly with the Columbus & Greenville to the position of chief clerk and on July 1, 1929, was promoted to assistant general freight agent, which position he held until his recent appointment as assistant traffic manager.

M. H. McEwen, general northwestern freight agent of the Chicago, Milwaukee, St. Paul & Pacific, has been promoted, effective May 1, to western traffic manager, with headquarters at Seattle, Wash., succeeding **Fred N. Hicks**, whose promotion to passenger traffic manager was reported in the April 30 issue of the *Railway Age*. **H. S. Zane**, general southwestern freight agent, with headquarters at Kansas City, Mo., has been appointed general northwestern freight agent at Minneapolis, Minn., replacing Mr. McEwen, and **Paul H. Drower**, traveling freight agent, has been promoted to general southwestern freight agent at Kansas City, relieving Mr. Zane.

Edwin W. Soergel, assistant freight traffic manager of the Chicago, Milwaukee, St. Paul & Pacific at Chicago, has been promoted, effective May 1, to freight traffic manager, with the same headquarters, succeeding **Eugene B. Finegan**, whose promotion to assistant chief traffic officer was reported in the *Railway Age* of April 30. **Owen T. Cull**, general freight agent at Chicago, has been promoted to assistant freight traffic manager, replacing Mr. Soergel, and **S. Grover Grace**, assistant general freight agent at Chicago, has been promoted to general freight agent succeeding Mr. Cull. **Gerald M. Ryan**, chief clerk in the freight department, has been promoted to assistant general freight agent at Chicago, relieving Mr. Grace.

Fred N. Hicks, western traffic manager of the Chicago, Milwaukee, St. Paul & Pacific, who has been appointed pas-



Fred N. Hicks

senger traffic manager, with headquarters at Chicago, as reported in the *Railway Age* of April 30, was born in Chicago on March 15, 1881, and began railway service in October, 1898, in the general of-



SUPER-POWER STEAM LOCOMOTIVES FOR ECONOMICAL PASSENGER SERVICE

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LIMA LOCOMOTIVE WORKS,



INCORPORATED, LIMA, OHIO

fice of the Lake Erie & Western (now part of the New York, Chicago & St. Louis) at Indianapolis, Ind. After serving briefly in the traffic department of the Chicago, Indianapolis & Louisville, he became, in April, 1904, traveling freight and passenger agent for the Milwaukee, with headquarters first at Philadelphia, Pa., and later at Indianapolis. He was city passenger agent at Chicago from April, 1911, to January, 1917, then going to Boston, Mass., as New England freight and passenger agent. In March, 1920, Mr. Hicks became general agent, passenger department, at Chicago, and two years later general agent at Milwaukee, Wis. He has been western traffic manager at Seattle, Wash., since April, 1924.

ENGINEERING AND SIGNALING

A. B. Clark, who has been assistant to the chief engineer of the Pennsylvania, at Philadelphia, Pa., since April 16, 1930, has retired from active service, after almost 49 years of service.

E. E. Tanner, supervisor of bridges and buildings, Buffalo and East, of the New York Central, with headquarters at Albany, N. Y., has been appointed general supervisor of bridges and buildings, Buffalo and East, with headquarters at New York.

W. O. Rutherford, division engineer of the Chicago Great Western, with headquarters at Des Moines, Iowa, has had his jurisdiction extended to cover the Illinois and the Iowa divisions, and will have his new headquarters at Oelwein, Iowa. **R. C. Arnold**, who has been acting division engineer at Oelwein, returns to his former position at St. Paul, Minn.

C. I. Van Arsdalen, road supervisor on the Illinois Central, with headquarters at Effingham, Ill., has been promoted to division engineer of the St. Louis division, with headquarters at Carbondale, Ill., succeeding **C. J. Harrington**, who has been transferred to the Illinois division, with headquarters at Champaign, Ill. Mr. Harrington succeeds **W. E. Russell**, who has been assigned to other engineering duties on the Springfield division, with headquarters at Clinton, Ill.

H. E. Brashares, assistant superintendent of signals of the Great Northern, with headquarters at St. Paul, Minn., has been promoted to superintendent of signals, with the same headquarters, succeeding **Charles A. Dunham**, who retired on May 1. **P. G. Seaholm**, office engineer in the signal department at St. Paul, has been promoted to assistant superintendent of signals to succeed Mr. Brashares.

Mr. Dunham was born on October 20, 1866, at Hamilton, Ont. He entered railway service in 1884 as a helper in the mechanical department of the Chicago, Burlington & Quincy at Chicago, and after service with several other companies, he went with the Union Switch & Signal Company in September, 1892, and later served with the National Switch & Signal Company. He was appointed inspector of signals on the Illinois Central in March, 1896, and became signal engineer in March,

1901, accepting a similar position on the Great Northern in June, 1905. He left the Great Northern in November, 1912, to become signal engineer of the Grand Trunk (now part of the Canadian National), with headquarters at Montreal, Que., but returned to the Great Northern on February 1 of the following year. His title was changed to superintendent of signals in April, 1924.

MECHANICAL

A. A. Burkhard, superintendent of shops of the Merchants Despatch Transportation Corporation, at East Rochester, N. Y., has retired from active service. Mr. Burkhard began his career in the car department of the Pittsburgh & Lake Erie at Pittsburgh, Pa., in April, 1884, as a messenger and office boy, later serving consecutively as car builder apprentice in the shops at McKees Rocks, Pa., then in various departments of the shops, as mechanic and inspector and as division general foreman at Glassport, Pa. In 1908, he was transferred to the West Albany, N. Y. shops of the New York Central as assistant general foreman, in February, 1916, he was promoted to general foreman, becoming division general foreman in May, 1920. Mr. Burkhard was transferred to Selkirk, N. Y., in March, 1925, and in August, 1930, went to the East Rochester shops of Merchants Despatch, as superintendent of shops, and now retires after a service record with the New York Central System of 54 years.

SPECIAL

F. W. Edge, inspector of staffs of the Canadian National, has been appointed superintendent of personnel.

OBITUARY

J. J. Mossman, assistant general freight agent on the Wabash, at Buffalo, N. Y., died April 20.

James J. Ford, who retired on January 1, 1932, as general agent for the New York Central at Denver, Col., died at that place on April 24 at the age of 76 years. He had been with that railroad since 1879, when he entered the employ of the Lake Shore & Michigan Southern.

Frank Johnson, formerly treasurer of the Missouri-Kansas-Texas, died in St. Louis on April 27. Mr. Johnson was born on February 12, 1871, at Fond du Lac, Wis., and entered the service of the Katy in June, 1892, as a stenographer and clerk in the treasury department, advancing through various positions in the treasury department to the position of treasurer. He retired as treasurer in May, 1936.

L. M. Rucker, superintendent of the Tennessee division of the Gulf, Mobile & Northern, with headquarters at New Albany, Miss., died at Jackson, Tenn., on April 4. Mr. Rucker was born on July 11, 1884, at Ripley, Miss., and entered railroad service with the Gulf, Mobile & Northern as a machinist helper at New Albany on May 20, 1906. In July, 1908, he became a brakeman and on April 1,

1912, he was promoted to conductor. He was appointed assistant trainmaster of the Jackson-Houston district of the Tennessee division on September 21, 1925, with headquarters at New Albany. Mr. Rucker was then promoted successively to trainmaster on November 18, 1928; assistant superintendent on October 1, 1935; and superintendent on March 15, 1937. In all of the latter appointments his headquarters remained at New Albany.

John J. Conn, general purchasing agent for the Atchison, Topeka & Santa Fe., with headquarters in Chicago, died at his home in Oak Park, Ill., on April 28. Mr. Conn had been promoted to this position in December, 1937, and a sketch of his railway career appeared in the *Railway Age* of December 25.

C. A. Buch, whose retirement on January 1, 1938, as secretary of the Car Service division of the Association of American Railroads, with headquarters at Washington, D. C., was reported in the *Railway Age* of December 25, died in Baltimore, Md., on May 3.

George E. Smart, who retired in June, 1932, as chief of car equipment of the Canadian National, died on April 25, at his home in Montreal, Que. Mr. Smart was born in Edinburgh, Scotland, on December 23, 1873, and began railroad service in 1892, in the car department of the Grand Trunk. He was connected with



George E. Smart

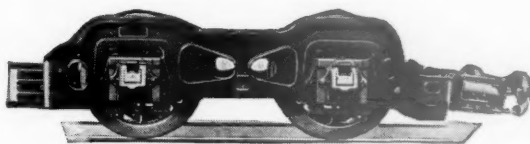
the Canadian Pacific from 1904 to 1913, holding successively the positions of general inspector, heating and lighting; general car inspector, and divisional car foreman, Eastern lines. In 1913, he became master car builder of the Canadian Government Railways (now C. N. R.), at Moncton, N. B., and in 1918, he was sent to Toronto, Ont., as general master car builder of the Canadian National. In 1920 Mr. Smart's jurisdiction was extended to include the Grand Trunk Pacific lines and later in the same year he became mechanical assistant to the operating vice-president. In 1923, he was appointed chief of car equipment, with headquarters at Montreal, the position he held until his retirement. Mr. Smart served as vice-chairman of the Mechanical Division, American Railway Association, from 1926 to 1927, and as chairman from 1928 to 1930.



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**necessary to enable the locomotive to make smooth,
quick starts and accelerate rapidly to road-speed.
Booster Power is now available for high pressure
and speeds up to 35 M.P.H.** » » » » » »



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CHICAGO

MONTREAL

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1938

Name of road	Av. mileage operated during period	Operating revenues				Maintenance of way and equipment			Operating ratio	Total	Net from railway operation	Net railway operating income	
		Freight	Passenger	(inc. misc.)	Total	Structures	Traffic	Portation				1938	1937
Akron, Canton & Youngstown.....	March 171	\$135,188	\$26	\$140,083	\$11,510	\$22,406	\$11,313	\$2,896	78.4	\$109,789	\$30,294	\$17,225	\$43,953
Alton	3 mos. 171	363,180	111	379,667	37,916	63,150	153,618	13,431	85.1	323,068	56,599	17,431	115,589
Alton	March 957	826,200	189,885	1,199,072	160,408	194,153	45,014	162,748	86.4	1,036,324	162,748	60,450	151,253
Alton	3 mos. 957	2,461,962	615,427	3,591,762	404,597	586,429	140,291	1,640,025	83.3	2,992,363	599,399	294,722	453,027
Archison, Topeka & Santa Fe System.....	March 13,512	8,992,378	1,165,556	11,866,168	1,751,894	2,941,266	476,166	4,815,219	92.8	10,377,853	808,315	425,145	1,531,433
Atlanta & West Point.....	3 mos. 13,512	25,685,848	3,756,980	32,364,284	4,736,058	7,372,539	1,408,472	14,238,428	95.6	30,946,997	1,417,287	2,324,172	3,838,530
Atlanta & West Point.....	March 93	90,027	136,077	195,564	22,312	47,337	66,021	126,118	92.7	126,118	9,959	93	5,380
Atlanta & West Point.....	3 mos. 93	254,079	391,260	53,936	74,717	151,260	194,875	380,990	97.4	380,990	10,270	19,308	7,737
Western of Alabama.....	March 133	96,769	22,512	139,110	18,955	30,898	7,379	56,655	88.9	123,728	15,382	1,561	2,372
Atlanta, Birmingham & Coast.....	3 mos. 133	267,954	73,992	394,489	49,341	91,054	23,129	165,971	91.2	359,826	34,663	6,018	1,012
Atlanta, Birmingham & Coast.....	March 639	259,786	37,983	330,901	44,141	54,102	124,297	275,903	83.4	275,903	54,998	29,637	43,775
Atlanta, Birmingham & Coast.....	3 mos. 639	663,884	114,338	863,270	129,008	151,260	73,146	355,238	91.0	785,992	2,099	2,099	72,981
Atlantic Coast Line.....	March 5,105	3,598,664	1,088,434	5,183,236	477,958	778,341	144,907	1,858,499	67.1	3,475,422	1,707,814	1,082,814	1,193,235
Charleston & Western Carolina.....	3 mos. 5,105	9,000,200	3,176,729	13,518,416	1,287,011	2,317,740	494,679	5,188,329	72.9	9,858,682	3,659,734	2,134,734	1,585,541
Charleston & Western Carolina.....	March 343	199,021	867	205,004	26,136	38,829	6,854	74,312	73.9	151,576	53,428	31,428	28,389
Charleston & Western Carolina.....	3 mos. 343	542,397	2,665	558,518	81,491	113,878	25,626	211,683	80.4	448,802	109,716	45,716	32,761
Baltimore & Ohio.....	March 6,446	9,055,517	744,431	10,549,384	929,346	2,496,215	392,026	4,507,629	84.1	8,667,991	1,681,393	762,126	3,241,532
Staten Island Rapid Transit.....	3 mos. 6,446	25,971,722	2,455,268	30,501,204	3,229,464	7,460,671	1,116,573	13,519,926	88.5	26,986,861	3,514,343	772,267	202,938
Staten Island Rapid Transit.....	March 24	51,834	63,691	125,803	8,314	20,963	1,098	83,010	98.9	124,455	1,348	26,939	30,014
Staten Island Rapid Transit.....	3 mos. 24	150,213	187,338	362,254	25,230	60,450	3,197	250,017	102.5	371,163	8,909	94,273	88,679
Bangor & Aroostook.....	March 603	612,427	21,460	651,591	106,600	96,839	166,411	333,335	61.2	399,015	252,576	194,118	236,103
Be-semer & Lake Erie.....	3 mos. 603	2,003,863	63,598	2,119,243	309,690	287,043	16,209	518,380	57.1	1,210,128	909,115	699,354	617,222
Be-semer & Lake Erie.....	March 225	349,820	725	360,387	41,413	168,529	11,057	126,699	104.9	378,064	17,677	36,805	282,603
Be-semer & Lake Erie.....	3 mos. 225	883,386	2,111	913,803	126,970	654,479	33,404	383,335	142.1	1,298,155	384,352	474,328	650,439
Boston & Maine.....	March 1,960	2,330,320	547,993	3,362,923	452,843	552,402	150,456	1,504,576	81.6	2,742,693	620,230	318,730	953,692
Burlington, Rock Island.....	3 mos. 1,960	6,479,901	1,756,843	9,574,486	1,395,915	1,520,187	194,144	4,501,369	84.6	8,096,952	1,477,534	556,718	460,791
Burlington, Rock Island.....	March 255	86,308	17,216	110,943	19,714	5,562	55,410	112,253	101.2	122,533	1,310	8,904	15,755
Burlington, Rock Island.....	3 mos. 255	245,851	51,084	319,346	61,050	58,129	15,515	164,161	102.9	328,763	9,417	31,832	33,626
Cambria & Indiana.....	March 37	110,160	.....	110,262	6,055	44,936	393	10,835	62.08	68,450	41,812	15,696	92,702
Canadian Pacific Lines in Maine.....	3 mos. 37	322,397	322,691	322,691	16,514	34,576	1,217	204,188	63.28	204,188	118,503	43,599	272,240
Canadian Pacific Lines in Maine.....	March 234	278,376	14,222	305,985	16,514	34,576	9,927	200,154	65.0	200,154	105,131	93,997	102,370
Canadian Pacific Lines in Maine.....	3 mos. 234	842,538	41,313	918,258	81,256	161,922	29,783	318,231	67.2	617,382	300,876	267,292	231,436
Canadian Pacific Lines in Vermont.....	March 91	46,229	7,997	65,788	13,044	27,941	4,456	62,401	172.9	113,781	47,993	54,702	36,372
Central of Georgia.....	3 mos. 91	123,760	27,257	183,612	34,984	72,158	189,466	189,466	178.1	327,057	143,445	164,493	111,258
Central of Georgia.....	March 1,926	1,068,845	106,732	1,357,050	176,491	259,119	55,673	590,062	85.8	1,164,312	192,738	78,052	309,295
Central of Georgia.....	3 mos. 1,926	2,818,145	366,471	3,679,322	496,480	721,334	165,547	1,716,390	91.0	3,346,915	332,407	3,885	475,133
Central of New Jersey.....	March 709	1,968,997	324,886	2,462,241	130,367	376,800	46,707	1,152,595	73.1	1,800,635	661,606	226,558	84,634
Central Vermont	3 mos. 709	5,613,997	1,014,062	7,077,717	393,726	1,401,983	140,183	3,340,137	74.8	5,294,260	1,783,457	643,568	163,952
Central Vermont	March 456	325,772	25,952	384,826	73,713	58,510	5,803	379,621	98.6	379,621	5,205	22,064	36,682
Central Vermont	3 mos. 456	912,421	103,198	1,122,109	201,315	206,154	36,696	672,005	104.8	1,175,580	53,471	132,762	99,685
Chesapeake & Ohio.....	March 3,102	7,113,266	208,446	7,581,797	1,008,997	1,756,169	196,930	2,219,742	72.6	5,502,004	2,079,793	1,298,993	5,061,494
Chicago & Eastern Illinois.....	3 mos. 3,102	22,078,944	683,361	23,477,121	2,845,206	5,165,176	606,977	6,675,154	69.0	16,209,136	7,267,985	4,698,480	10,386,770
Chicago & Eastern Illinois.....	March 927	972,919	102,557	1,223,472	134,486	216,440	56,674	989,636	80.9	989,636	233,836	154,836	337,345
Chicago & Eastern Illinois.....	3 mos. 927	2,828,788	381,094	3,614,318	413,984	643,488	168,151	1,522,480	81.5	2,946,359	667,759	430,759	620,790
Chicago & Illinois Midland.....	March 131	261,921	228	270,343	22,134	67,447	18,168	81,964	77.0	208,230	62,113	44,528	130,962
Chicago & North Western.....	3 mos. 131	836,345	2,759	839,104	44,876	201,609	60,563	252,296	73.0	634,753	223,923	159,286	340,340
Chicago & North Western.....	March 8,391	4,235,931	772,375	6,125,510	763,370	1,586,384	173,731	2,941,133	93.6	5,782,095	392,515	275,497	188,512
Chicago & North Western.....	3 mos. 8,391	13,301,723	2,492,945	17,786,884	2,362,718	4,677,482	555,569	8,794,330	97.4	17,318,056	468,828	1,528,062	771,322
Chicago, Burlington & Quincy.....	March 8,970	5,623,359	570,859	7,008,319	699,483	1,294,365	259,915	2,816,010	76.7	5,378,651	1,629,668	888,567	1,705,178
Chicago Great Western.....	3 mos. 8,970	15,910,137	1,945,666	20,167,090	2,067,826	4,181,137	736,419	8,466,033	81.1	16,361,061	3,806,029	1,598,116	450,104
Chicago Great Western.....	March 1,505	1,295,657	34,925	1,424,795	216,349	278,011	58,042	587,670	83.8	1,193,889	230,906	137,512	152,736
Chicago Great Western.....	3 mos. 1,505	3,622,631	114,495	4,013,168	654,774	750,699	181,606	1,776,977	87.7	3,520,612	492,556	212,748	72,598
Chicago, Indianapolis & Louisville.....	March 549	573,847	51,085	682,762	59,772	161,293	30,567	309,714	87.5	597,734	85,028	42,149	80,383
Chicago, Indianapolis & Louisville.....	3 mos. 549	1,630,911	142,946	1,947,525	195,509	515,886	90,446	924,446	94.4	1,839,179	108,346	28,260	132,147

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10 dollars

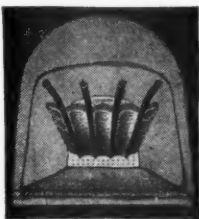


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***Locomotive Combustion
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REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1938—CONTINUED

Av. mileage operated during period	Name of road	Operating revenues			Maintenance of Way and structures			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	Total (inc. misc.)	Way and structures	Equipment	Traffic	Trans- portation	Total	1937			1938	
Chicago, Milwaukee, St. Paul & Pacific..... March 3 mos.	10,961	\$6,572,994	\$532,014	\$7,819,997	\$885,236	\$1,720,478	\$214,114	\$3,300,740	\$6,307,410	83.2	\$1,312,587	\$608,587	\$227,564	\$1,049,098
Chicago, Milwaukee, St. Paul & Pacific..... March 3 mos.	10,963	18,378,665	1,736,066	22,221,298	2,450,776	4,749,918	652,376	9,800,138	18,791,999	84.6	3,429,259	1,260,299	1,017,248	1,999,254
Chicago, Rock Island & Pacific..... March 3 mos.	7,496	5,004,386	584,966	6,088,428	702,502	2,162,642	220,105	2,613,901	5,054,402	82.0	1,033,926	552,515	217,284	399,320
Chicago, Rock Island & Pacific..... March 3 mos.	7,497	13,552,817	1,863,972	16,894,413	1,858,412	3,410,302	697,893	7,770,825	14,790,735	87.5	2,103,678	621,008	238,129	215,603
Chicago, Rock Island & Gulf..... March 3 mos.	626	253,677	25,337	369,893	50,734	34,963	19,918	136,289	268,029	72.5	101,864	76,701	—3,211	27,065
Chicago, St. Paul, Minneapolis & Omaha..... March 3 mos.	626	748,042	89,878	1,118,968	134,682	104,314	58,010	438,683	813,234	72.7	305,734	231,333	—7,325	20,838
Chicago, St. Paul, Minneapolis & Omaha..... March 3 mos.	1,648	1,055,103	104,840	1,245,810	94,178	204,213	38,594	658,138	1,064,068	85.4	181,742	73,527	—22,401	—50,027
Chicago, St. Paul, Minneapolis & Omaha..... March 3 mos.	1,648	3,135,205	339,019	3,723,669	299,524	719,067	118,977	2,014,141	3,357,339	90.2	366,330	40,801	—255,474	—485,494
Clinchfield Railroad..... March 3 mos.	308	507,047	3,409	515,881	36,504	130,181	19,436	110,627	318,496	61.7	197,385	146,665	150,213	382,297
Clinchfield Railroad..... March 3 mos.	308	1,462,435	10,841	1,883,266	102,886	351,965	58,690	328,310	894,089	60.0	595,117	443,889	493,852	910,203
Colorado & Southern..... March 3 mos.	797	4,359,670	221,158	5,185,494	559,676	1,311,766	13,946	231,273	465,068	89.3	55,426	—31,983	—30,652	75,984
Colorado & Southern..... March 3 mos.	797	1,837,432	92,315	1,837,751	126,579	385,070	43,218	360,670	1,292,258	89.3	145,495	—85,583	—130,735	113,556
Fort Worth & Denver City..... March 3 mos.	902	478,632	41,057	509,272	58,872	104,532	17,947	187,463	404,767	79.5	104,505	64,787	21,776	89,673
Fort Worth & Denver City..... March 3 mos.	902	1,467,829	164,969	1,585,875	151,222	315,879	55,153	562,239	1,188,825	75.0	397,050	278,992	153,947	221,286
Columbus & Greenville..... March 3 mos.	168	93,367	6,907	105,868	15,925	13,365	4,446	39,480	84,968	80.3	20,900	13,493	12,673	4,205
Columbus & Greenville..... March 3 mos.	168	261,526	22,351	302,134	54,769	48,192	13,489	117,046	266,188	88.1	35,946	15,312	13,321	39,244
Delaware & Hudson..... March 3 mos.	831	1,453,848	86,423	1,621,686	133,392	291,107	43,103	757,849	1,334,234	82.3	287,452	132,288	132,288	492,873
Delaware & Hudson..... March 3 mos.	831	4,434,926	288,418	4,944,633	468,912	1,009,694	131,252	2,055,240	4,255,032	86.1	689,601	220,071	218,884	950,517
Delaware, Lackawanna & Western..... March 3 mos.	986	2,837,008	501,858	3,759,566	172,214	641,494	111,499	1,880,021	2,953,877	78.2	822,089	387,089	368,082	802,222
Delaware, Lackawanna & Western..... March 3 mos.	986	7,626,299	1,612,230	10,466,581	522,561	1,878,067	338,653	5,504,335	8,649,513	82.6	1,817,068	468,893	1,523,649	1,523,649
Denver & Rio Grande Western..... March 3 mos.	2,570	1,469,530	110,732	1,667,636	175,005	484,241	61,387	665,526	1,471,383	88.2	196,253	—32,170	—79,779	—46,393
Denver & Rio Grande Western..... March 3 mos.	2,570	4,308,779	290,337	4,860,881	435,882	1,439,743	186,374	2,029,318	4,136,983	89.2	523,698	—31,370	—293,776	189,455
Denver & Salt Lake..... March 3 mos.	232	96,841	5,090	110,997	17,679	40,480	2,375	44,252	103,440	103.4	—7,743	—31,946	11,726	37,931
Denver & Salt Lake..... March 3 mos.	232	421,401	22,669	472,224	52,643	128,846	8,261	161,825	385,006	81.5	87,218	129,816	129,816	337,293
Detroit & Mackinac..... March 3 mos.	242	50,262	2,190	59,526	8,281	12,254	766	25,379	49,696	83.5	9,830	6,678	2,297	13,007
Detroit & Mackinac..... March 3 mos.	242	128,725	8,379	152,511	23,610	34,318	2,952	73,297	143,608	94.2	8,903	—356	—10,787	18,054
Detroit & Toledo Shore Line..... March 3 mos.	March 3 mos.	236,841	.....	237,415	22,053	23,030	8,884	71,648	132,939	5.60	104,485	76,310	35,939	182,419
Detroit & Toledo Shore Line..... March 3 mos.	50	737,410	.....	739,002	58,634	71,330	27,912	203,184	383,161	5.18	355,841	272,769	143,539	436,413
Detroit, Toledo & Ironton..... March 3 mos.	472	392,132	171	403,004	45,341	81,342	10,936	115,452	270,948	66.9	134,056	84,372	75,245	330,584
Detroit, Toledo & Ironton..... March 3 mos.	472	1,384,742	531	1,384,372	148,660	248,291	31,955	379,909	867,983	62.7	516,389	371,739	315,279	945,176
Duluth, Missabe & Iron Range..... March 3 mos.	540	96,139	1,909	115,356	105,609	248,096	4,094	150,974	545,574	472.9	430,218	—396,784	—395,682	—675,338
Duluth, Missabe & Iron Range..... March 3 mos.	540	288,908	4,456	346,085	331,850	692,337	12,755	462,802	1,603,058	463.8	—1,255,973	—1,410,836	—1,413,965	—1,989,615
Duluth, Winnipeg & Pacific..... March 3 mos.	179	96,037	801	99,325	20,409	17,971	2,247	46,249	90,936	91.6	8,389	243	17,604	18,881
Duluth, Winnipeg & Pacific..... March 3 mos.	179	298,104	3,295	309,845	56,036	57,200	6,737	146,563	278,094	89.8	31,751	6,594	—50,066	14,037
Elgin, Joliet & Eastern..... March 3 mos.	435	789,166	.....	876,563	114,442	217,565	14,661	419,817	803,764	91.8	71,799	—27,256	—42,145	652,119
Elgin, Joliet & Eastern..... March 3 mos.	435	2,340,738	.....	2,577,388	333,726	653,509	44,693	1,261,817	2,398,609	93.1	178,779	—98,114	—134,084	1,253,567
Erie..... March 3 mos.	2,275	4,669,873	377,709	5,491,776	504,968	1,338,872	165,534	2,408,576	4,679,906	85.2	811,870	248,488	16,866	1,893,545
Erie..... March 3 mos.	2,275	13,364,869	1,166,023	15,721,893	1,379,415	3,701,806	503,930	7,151,015	13,512,788	85.9	2,209,105	542,265	—269,208	4,194,868
New Jersey & New York..... March 3 mos.	46	14,315	125,247	171,382	3,938	1,803	15	42,618	60,571	106.3	—3,582	—10,800	—22,431	—44,343
New Jersey & New York..... March 3 mos.	46	40,215	.....	171,382	11,971	36,781	1,573	136,310	190,681	111.3	—19,296	—11,178	—81,846	—84,388
New York, Susquehanna & Western..... March 3 mos.	143	231,419	23,093	266,300	14,999	26,986	3,087	110,226	170,027	63.8	96,273	64,081	29,482	68,327
New York, Susquehanna & Western..... March 3 mos.	143	695,807	67,991	801,024	44,531	80,090	9,747	331,123	508,804	63.5	292,220	196,007	74,573	136,783
Florida East Coast..... March 3 mos.	685	995,161	470,103	1,583,178	92,073	164,438	24,340	448,106	794,346	50.2	788,832	702,614	622,766	433,435
Florida East Coast..... March 3 mos.	685	2,177,539	1,389,758	3,906,710	240,460	457,715	73,564	1,180,334	2,172,899	55.6	1,733,811	1,481,698	1,306,356	1,142,511
Georgia Railroad..... March 3 mos.	329	257,675	10,351	293,304	34,832	52,220	18,643	132,407	252,103	86.0	41,201	25,137	36,526	106,163
Georgia Railroad..... March 3 mos.	329	708,048	31,394	806,114	98,272	147,502	57,004	388,510	735,115	91.2	70,999	24,260	58,064	190,940
Georgia & Florida..... March 3 mos.	408	90,649	1,633	96,050	20,329	17,636	4,938	37,875	89,612	93.3	6,438	—1,438	—5,062	11,340
Georgia & Florida..... March 3 mos.	408	239,169	5,234	254,645	61,864	52,191	25,444	106,884	263,284	103.4	—8,639	—32,028	—37,994	19,027
Grand Trunk Western..... March 3 mos.	1,032	1,289,996	61,037	1,451,909	197,280	360,827	43,534	786,884	1,464,429	100.9	—12,520	—142,260	—215,626	695,938
Grand Trunk Western..... March 3 mos.	1,032	3,605,039	233,952	4,147,293	539,052	1,022,999	128,194	2,271,977	4,193,937	101.1	—46,007	—427,763	—622,367	912,984
Canadian National Lines in New England..... March 3 mos.	172	100,204	3,405	111,452	30,538	37,223	2,675	72,688	147,389	132.2	35,937	51,241	—79,113	—59,941
Canadian National Lines in New England..... March 3 mos.	172	282,844	14,711	319,176	78,258	71,904	7,847	191,432	366,726	114.9	—47,550	—93,465	—176,547	—152,349
Great Northern..... March 3 mos.	8,071	4,416,850	294,032	5,093,675	478,062	1,108,746	185,227	2,044,943	4,222,862	82.9	870,813	130,279	—38,057	673,195
Great Northern..... March 3 mos.	8,071	11,612,595	955,124	13,807,698	1,468,461	3,152,157	550,524	6,545,661	12,477,862	90.4	1,339,457	—697,695	—1,164,709	579,815

****. The railroad story is one of
the greatest stories that was ever
told.***

*"Nothing in the world tells better
the spirit of pioneering and of having
done things, because they don't know
today the difficulties that you men
went through in the pioneering days
of laying the American railways."*

CHARLES F. KETTERING, President
General Motors Research Corp.



Today's highly developed American railroads have been built upon difficulties which were successfully solved. As Mr. Kettering said—"They do not know today the difficulties that you men went through."

The development of the Elesco locomotive superheater presents a similar history. Few people know of the many serious difficulties that beset the development of the superheater. Every known method of manufacture was tried that theoretically appeared satisfactory. In actual locomotive operation, however, they would not stand up and had to be discarded. We found only one satisfactory design for the manufacture of superheaters . . . machine-die-forging the ends of the superheater tubing to form return bends and ball ends.

This process is also used in the REmanu-facture of wornout superheater units. When you use this service your superheaters will run from shopping to shopping without attention

THE SUPERHEATER COMPANY

Representative of
AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street, NEW YORK
122 S. Michigan Avenue, CHICAGO

Canada:
THE SUPERHEATER COMPANY, LTD.
MONTREAL, QUE.

A-1222

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues				Operating expenses			Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	Total	(inc. misc.)	Way and structures	Maintenance of equipment	Traffic			Operating income	1937
Green Bay & Western.....	March 234	\$120,076	\$426	\$124,649		\$20,760	\$16,065	\$6,200	75.2	\$93,834	\$30,815	\$13,114
Green Bay & Western.....	3 mos. 234	349,886	1,590	351,476		54,818	48,797	19,332	78.3	273,589	45,476	29,762
Gulf & Ship Island.....	March 259	119,043	9,839	128,882		21,883	16,639	6,511	77.6	111,596	14,677	28,601
Gulf & Ship Island.....	3 mos. 259	263,840	23,064	286,904		56,877	46,439	8,811	93.0	303,069	22,862	13,474
Gulf, Mobile & Northern.....	March 936	538,477	22,508	560,985		67,803	97,251	39,725	69.00	460,546	133,600	78,401
Gulf, Mobile & Northern.....	3 mos. 936	1,507,854	65,788	1,573,642		209,964	269,152	122,683	73.10	1,201,607	296,630	130,139
Illinois Central.....	March 4,951	6,013,869	762,637	6,776,506		649,411	1,471,494	177,510	75.4	3,005,235	1,147,217	1,018,227
Illinois Central.....	3 mos. 4,951	17,960,123	2,437,373	20,397,496		1,943,545	4,278,503	544,214	76.2	16,858,968	3,213,025	2,888,616
Yazoo & Mississippi Valley.....	March 1,619	939,756	62,966	1,002,722		110,617	98,279	29,431	77.4	856,281	249,826	27,488
Yazoo & Mississippi Valley.....	3 mos. 1,619	2,973,353	199,631	3,172,984		339,038	489,734	90,746	72.7	2,483,510	498,740	273,584
Illinois Central System.....	March 6,570	6,973,625	825,603	7,799,228		747,690	1,647,577	206,941	75.7	3,507,652	1,251,468	1,055,715
Illinois Central System.....	3 mos. 6,570	20,933,476	2,637,004	23,570,480		2,235,583	4,768,237	634,960	75.7	19,326,993	3,705,576	3,191,000
Illinois Terminal.....	March 496	334,536	60,065	394,601		43,834	69,926	16,388	72.49	311,452	73,888	61,361
Illinois Terminal.....	3 mos. 496	945,583	179,133	1,124,716		125,937	201,147	48,928	74.32	914,152	168,170	126,613
Kansas City Southern.....	March 879	1,005,325	18,216	1,023,541		124,474	158,591	51,047	74.7	338,635	296,635	239,401
Kansas City Southern.....	3 mos. 879	2,956,520	49,237	3,005,757		339,600	452,412	150,869	64.1	2,150,810	894,246	725,739
Kansas, Oklahoma & Gulf.....	March 327	209,937	428	210,365		18,840	21,098	8,919	50.0	106,389	88,597	65,767
Kansas, Oklahoma & Gulf.....	3 mos. 327	595,367	1,385	596,752		51,648	54,767	27,147	48.8	544,637	249,120	195,657
Lake Superior & Ishpeming.....	March 156	38,523	87	38,610		22,787	32,495	668	216.4	86,000	-67,109	-56,866
Lake Superior & Ishpeming.....	3 mos. 156	104,184	220	104,404		68,138	92,933	2,057	233.2	252,058	-206,750	-207,577
Lehigh & Hudson River.....	March 96	128,780	52	128,832		8,804	23,959	3,496	67.6	87,526	28,847	15,341
Lehigh & Hudson River.....	3 mos. 96	339,404	222	340,626		26,741	70,976	11,607	77.5	264,764	39,994	297
Lehigh & New England.....	March 205	273,540	.....	273,540		25,387	67,443	6,968	79.0	212,556	41,083	48,954
Lehigh & New England.....	3 mos. 212	745,391	.....	745,391		83,488	195,466	20,690	85.4	641,171	64,289	100,877
Lehigh Valley.....	March 1,308	2,917,499	161,317	3,078,816		189,474	667,049	110,570	81.3	2,679,352	321,739	111,560
Lehigh Valley.....	3 mos. 1,308	8,797,243	552,322	9,349,565		563,290	1,930,306	333,287	80.8	8,076,281	1,057,281	398,501
Louisiana & Arkansas.....	March 606	470,510	9,136	479,646		64,145	31,008	14,939	67.7	444,988	161,939	119,957
Louisiana & Arkansas.....	3 mos. 606	1,360,183	29,550	1,389,733		181,787	222,500	95,713	67.5	976,599	347,873	272,612
Louisiana, Arkansas & Texas.....	March 240	99,356	123	100,479		24,961	14,845	5,010	87.1	90,682	7,753	5,495
Louisiana, Arkansas & Texas.....	3 mos. 240	285,250	283	285,533		63,029	42,362	14,989	92.1	262,932	6,482	610
Louisville & Nashville.....	March 4,938	5,025,350	495,716	5,521,066		603,351	1,405,275	249,127	83.8	977,287	405,793	380,430
Louisville & Nashville.....	3 mos. 4,938	15,351,333	1,673,100	16,024,433		2,120,189	4,343,033	622,635	84.0	13,443,886	1,200,231	1,180,665
Maine Central.....	March 1,008	888,532	68,026	956,558		157,956	191,304	8,068	73.6	783,547	175,923	113,725
Maine Central.....	3 mos. 1,008	2,615,847	216,603	2,832,450		480,336	553,332	33,727	77.2	2,362,487	504,484	308,605
Midland Valley.....	March 352	99,518	7	100,525		15,270	14,405	2,335	65.7	86,120	22,394	17,291
Midland Valley.....	3 mos. 352	294,886	19	294,905		34,998	41,202	7,723	63.4	287,183	73,643	53,611
Minneapolis & St. Louis.....	March 1,523	659,654	9,741	669,395		81,581	117,425	43,232	81.0	567,680	90,894	54,786
Minneapolis & St. Louis.....	3 mos. 1,523	1,839,725	26,689	1,866,414		214,623	359,124	129,691	85.0	1,669,491	160,898	57,123
Minneapolis, St. Paul & Sault Ste. Marie.....	March 4,297	1,630,414	67,291	1,697,705		241,408	403,360	60,806	93.1	1,283,133	48,740	199,356
Minneapolis, St. Paul & Sault Ste. Marie.....	3 mos. 4,300	4,410,525	218,161	4,628,686		732,537	1,157,178	2,789,106	100.9	5,134,423	-584,495	-963,007
Duluth, South Shore & Atlantic.....	March 549	133,591	10,892	144,483		28,059	28,827	4,798	93.1	146,170	-3,108	-11,006
Duluth, South Shore & Atlantic.....	3 mos. 549	343,046	34,832	377,878		103,330	98,788	13,928	113.5	471,651	-97,220	-118,471
Spokane International.....	March 163	54,128	1,334	55,462		11,715	8,350	2,216	80.4	47,133	12,033	6,908
Spokane International.....	3 mos. 163	124,725	3,766	128,491		27,583	23,016	6,472	92.9	135,444	10,374	-4,592
Mississippi Central.....	March 150	73,751	1,838	75,589		12,145	11,247	7,026	77.5	60,324	12,726	6,328
Mississippi Central.....	3 mos. 150	188,356	5,471	193,827		33,966	31,762	17,887	86.3	172,569	13,077	3,480
Missouri-Arkansas.....	March 355	78,265	1,418	79,683		25,173	10,814	5,223	93.2	78,312	5,711	3,191
Missouri-Arkansas.....	3 mos. 365	238,253	4,232	242,485		68,102	38,368	16,394	90.6	232,990	11,792	-11,852
Missouri-Illinois.....	March 193	91,653	360	92,013		15,552	13,853	2,877	73.8	69,351	18,179	9,449
Missouri-Illinois.....	3 mos. 193	246,579	1,207	247,786		40,440	40,510	8,743	79.0	199,832	33,712	34,460
Missouri-Kansas-Texas Lines.....	March 3,294	1,860,362	155,557	2,015,919		339,565	375,796	113,719	84.5	1,680,717	350,145	399,926
Missouri-Kansas-Texas Lines.....	3 mos. 3,294	5,343,798	494,751	5,838,549		944,215	1,099,737	339,424	86.1	5,593,554	451,146	-94,122
Missouri Pacific.....	March 7,175	5,622,743	372,878	5,995,621		1,069,038	1,346,858	240,635	83.7	5,508,173	574,218	1,153,625
Missouri Pacific.....	3 mos. 7,175	16,112,050	1,249,167	17,361,217		2,473,495	3,896,642	720,408	82.7	15,796,392	1,823,620	2,814,285

Continued on next left-hand page



NINE new streamlined locomotives of the 4-6-4 type have been completed for the Chicago and North Western to speed up the heavy passenger trains between Chicago and Omaha. The trains in this service, usually consisting of 14 to 16 cars, have outgrown the capacities of the existing 4-6-2 engines which previously hauled them.

The new streamlined locomotives, attractively sheathed and painted to harmonize with the new cars also operating in this service, develop maximum possible power obtainable with three driving axles.

NEW POWER — NEW PROFITS

Weight on Drivers	216,000 pounds	Diameter of Drivers	84 inches
Weight of Engine	412,000 pounds	Boiler Pressure	300 pounds
Cylinders	25 x 29 inches	Tractive Power	55,000 pounds

AMERICAN LOCOMOTIVE COMPANY
36 CHURCH STREET NEW YORK, N.Y.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues				Operating expenses				Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	(inc. misc.)	Total	Way and structures	Maintenance of equipment	Traffic	Trans- portation			Operating income	1937
Gulf Coast Lines.....	March 1,767	\$1,567,229	\$1,737	\$1,666,243	\$212,213	\$192,362	\$44,248	\$467,033	\$63,476	57.82	\$702,767	\$626,279	\$469,325
.....	3 mos. 1,767	4,833,020	127,405	4,649,374	559,981	566,485	139,806	1,364,278	2,773,243	59.65	1,876,131	1,654,480	1,181,291
International Great Northern.....	March 1,155	887,152	71,444	1,067,590	186,097	197,720	32,067	461,995	907,882	85.04	159,708	98,401	11,885
.....	3 mos. 1,155	2,489,280	231,964	3,075,387	439,918	588,071	97,373	1,369,937	2,665,997	86.69	409,390	226,760	100,635
Mobile & Ohio.....	March 1,194	960,635	23,377	1,036,151	136,429	205,195	44,358	383,967	814,765	78.6	221,386	157,424	71,043
.....	3 mos. 1,194	2,727,201	77,575	2,985,891	342,787	555,949	130,743	1,211,075	2,170,949	79.4	614,942	429,579	183,289
Monongahela.....	March 1,172	712,175	646	281,729	19,561	21,084	537	66,889	111,102	39.4	170,627	139,909	69,717
.....	3 mos. 1,172	2,121,175	1,992	719,425	67,666	62,699	1,520	199,980	341,179	47.4	378,246	286,291	77,536
Montour.....	March 56	109,318	.....	110,761	7,851	36,634	996	35,559	87,450	79.0	23,311	8,442	31,098
.....	3 mos. 56	342,922	.....	348,085	21,245	109,798	3,075	114,320	269,940	77.6	78,145	29,928	107,113
Nashville, Chattanooga & St. Louis.....	March 1,116	972,555	96,604	1,200,289	150,298	201,479	60,629	494,864	767,299	80.6	232,990	156,635	112,913
.....	3 mos. 1,116	2,608,140	326,809	3,322,810	413,048	578,356	203,536	1,423,827	2,805,926	84.4	516,884	283,840	199,038
Nevada Northern.....	March 166	34,875	1,511	41,471	5,054	3,115	1,302	11,277	25,875	62.4	15,596	8,144	11,605
.....	3 mos. 166	101,497	4,048	120,873	21,999	9,892	3,724	31,299	81,939	67.8	38,934	16,235	26,555
New York Central.....	March 11,080	16,655,898	4,381,372	24,202,202	2,613,771	5,287,237	543,526	10,576,883	20,303,823	83.9	3,898,379	963,462	36,918
.....	3 mos. 11,080	47,031,500	14,702,832	70,057,954	7,368,080	15,084,741	1,629,922	31,738,836	59,761,426	85.3	10,296,528	1,486,417	1,798,743
Pittsburgh & Lake Erie.....	March 233	954,813	42,261	1,047,328	106,268	349,412	88,431	441,814	1,009,146	96.4	38,182	76,757	97,970
.....	3 mos. 233	2,500,434	139,194	2,773,073	275,293	1,075,447	285,282	1,336,766	3,018,468	108.7	241,395	57,929	23,853
New York, Chicago & St. Louis.....	March 1,704	2,768,357	53,168	2,923,459	317,792	479,740	124,757	1,058,540	2,433,748	76.8	679,711	466,981	196,391
.....	3 mos. 1,704	7,979,957	197,085	8,473,851	925,960	1,431,909	358,383	3,522,365	6,594,111	77.8	1,879,740	1,247,297	459,092
New York, New Haven & Hartford.....	March 2,020	3,209,392	2,033,387	5,926,447	660,387	1,193,590	86,804	2,675,873	4,985,188	84.1	941,259	421,259	132,126
.....	3 mos. 2,020	8,742,763	6,386,251	17,020,092	1,993,228	3,213,414	304,438	7,731,024	14,373,214	84.4	2,646,878	1,086,878	553,462
New York Connecting.....	March 21	193,580	.....	204,577	12,520	8,808	.....	32,190	54,703	26.7	149,874	113,509	85,687
.....	3 mos. 21	481,397	.....	501,736	39,162	41,493	.....	96,008	180,430	36.0	321,306	209,667	137,385
New York, Ontario & Western.....	March 576	474,383	3,460	523,062	60,113	136,677	11,959	270,793	504,397	96.4	18,665	35,206	66,747
.....	3 mos. 576	1,396,373	21,360	1,558,417	188,111	388,358	36,326	818,727	1,514,174	97.2	44,243	116,202	204,844
Norfolk & Western.....	March 6,721	5,198,953	136,366	5,551,244	742,557	1,310,675	139,146	1,611,517	3,997,365	72.0	1,553,879	706,115	824,287
.....	3 mos. 6,721	15,439,443	449,526	16,450,139	2,112,646	3,872,088	422,712	4,763,789	11,750,193	71.4	4,699,946	1,838,126	2,281,674
Norfolk Southern.....	March 809	340,708	4,140	360,279	65,752	52,367	25,039	139,062	305,330	84.7	54,949	19,873	55,902
.....	3 mos. 809	881,872	12,213	942,691	185,556	156,788	71,893	395,938	884,675	93.8	58,016	43,388	77,555
Northern Pacific.....	March 6,721	5,533,070	257,244	4,233,032	447,209	985,134	190,328	1,376,718	3,767,181	88.9	471,314	106,140	209,175
.....	3 mos. 6,721	15,500,584	841,006	11,487,046	1,244,277	3,007,658	503,249	5,484,767	11,062,880	96.3	424,166	1,293,189	1,535,881
Northwestern Pacific.....	March 352	89,314	39,208	147,080	80,620	45,682	3,535	143,605	286,278	194.6	139,198	157,434	166,150
.....	3 mos. 352	308,821	125,177	493,810	227,035	146,440	11,958	435,648	857,928	173.7	364,118	419,726	448,342
Oklahoma City-Ada-Atoka.....	March 132	35,142	298	37,271	9,118	17,36	807	11,718	25,592	68.7	11,679	8,281	2,515
.....	3 mos. 132	107,799	1,022	114,269	22,512	4,884	2,522	33,647	69,474	60.8	44,795	36,012	19,310
Pennsylvania.....	March 10,306	20,819,448	5,125,097	28,918,609	2,872,727	5,273,795	645,427	11,444,634	41,946,622	74.3	7,418,194	4,194,622	3,468,157
.....	3 mos. 10,306	58,363,012	16,409,071	82,904,131	8,501,434	16,115,704	1,969,384	34,514,245	63,000,421	78.4	17,903,710	9,233,479	7,124,908
Long Island.....	March 394	542,578	1,120,861	1,748,643	170,565	313,031	8,834	983,568	3,385	86.2	240,565	3,385	104,435
.....	3 mos. 394	1,378,414	3,419,854	5,027,890	503,936	927,075	23,953	2,881,670	4,438,411	88.3	389,479	23,039	374,377
Pennsylvania-Reading Seashore Lines.....	March 412	219,527	106,026	342,812	75,090	77,942	6,822	263,733	439,544	128.2	96,732	170,346	230,830
.....	3 mos. 412	600,919	304,119	957,592	213,804	216,430	19,820	775,759	1,274,706	133.1	317,114	528,060	693,425
Pere Marquette.....	March 2,115	1,851,926	59,864	2,022,721	294,887	480,191	65,000	893,218	1,828,608	90.4	194,113	40,830	95,761
.....	3 mos. 2,115	5,219,066	219,970	5,721,747	873,437	1,466,560	186,294	2,636,620	5,151,934	95.3	269,813	188,672	468,979
Pittsburgh & Shawmut.....	March 100	43,367	168	44,041	Cr. 359	21,385	1,495	15,741	42,793	97.1	1,248	817	344
.....	3 mos. 100	131,594	947	134,443	29,521	57,218	4,922	51,602	158,006	117.5	23,577	28,577	23,069
Pittsburgh & West Virginia.....	March 136	215,505	.....	215,505	32,088	52,096	16,243	60,856	183,198	78.5	50,301	46,739	56,430
.....	3 mos. 136	609,464	.....	661,699	91,023	150,363	48,927	177,892	533,328	80.6	128,371	97,847	147,960
Pittsburgh, Shawmut & Northern.....	March 190	72,009	.....	72,693	12,364	12,143	1,117	28,082	59,596	82.0	13,097	7,918	1,298
.....	3 mos. 190	226,863	.....	229,526	36,909	40,341	3,503	89,811	189,164	82.4	40,362	24,555	5,800
Reading.....	March 1,452	3,532,319	262,382	4,005,057	299,680	835,582	80,807	1,540,735	3,131,070	78.2	873,987	658,349	1,718,252
.....	3 mos. 1,452	10,177,911	817,548	11,578,816	696,238	2,547,730	230,995	5,416,329	9,341,597	80.7	2,237,219	1,457,805	1,581,251
Richmond, Fredericksburg & Potomac.....	March 118	398,192	268,078	796,892	68,243	140,600	9,773	331,868	604,987	75.9	191,905	132,421	65,598
.....	3 mos. 118	1,049,043	823,890	2,192,724	193,568	414,401	29,674	945,800	1,740,857	79.4	451,867	292,825	133,839

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REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues				Operating expenses				Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	Total	Way and structures	Maintenance of equip-	Traffic	Trans- portation	Total			1938	1937
Rutland	407	\$153,646	\$28,118	\$181,764	\$34,928	\$67,862	101,188	\$151,170	\$280,844	116.1	—\$39,021	—\$68,561	—\$6,434
St. Louis-San Francisco	4,885	2,996,103	232,188	3,228,291	554,502	854,707	1,094,420	1,455,336	3,154,306	88.9	393,928	39,260	507,948
St. Louis, San Francisco & Texas	4,885	8,272,683	786,236	9,058,919	1,675,946	2,550,242	343,713	4,356,312	9,504,268	95.3	468,643	—636,102	1,156,257
St. Louis, San Francisco & Texas	266	327,621	1,654	329,275	24,361	15,004	7,917	55,511	109,403	89.8	12,497	—28,746	—25,197
St. Louis Southwestern Lines	1,706	4,262,408	64,723	4,327,131	603,034	620,522	845,311	1,200,147	3,409,544	75.6	1,101,915	280,410	570,519
Seaboard Air Lines	4,318	2,988,781	635,282	3,624,063	471,515	713,567	176,833	1,488,913	3,077,859	76.3	955,433	428,155	882,128
Southern Railway	6,611	6,018,762	680,564	6,700,326	933,624	1,336,392	156,996	2,808,424	5,551,784	76.0	1,749,089	756,746	2,221,561
Alabama Great Southern	315	451,748	42,145	493,893	84,518	136,786	10,961	177,592	433,280	80.1	107,549	102,742	145,429
Cincinnati, New Orleans & Texas Pacific	337	1,056,593	110,563	1,167,156	140,548	257,317	27,924	338,174	860,367	88.9	389,449	287,067	340,117
Georgia Southern & Florida	398	105,467	57,258	162,725	33,636	35,079	1,832	82,103	162,967	87.3	23,706	655	48,860
New Orleans & Northeastern	204	234,887	16,875	251,762	41,535	105,472	5,346	253,793	494,820	84.4	91,723	28,389	144,432
Northern Alabama	100	46,136	1,137	47,273	9,184	1,425	1,117	16,475	30,426	62.3	18,424	133	30,364
Southern Pacific	8,724	24,680,535	5,023,350	29,703,885	4,282,160	6,246,399	1,024,330	14,913,303	28,833,367	88.0	3,926,370	—321,935	1,773,366
Southern Pacific Steamship Lines .....	....	439,617	27,793	467,410	13,786	103,708	18,554	443,153	595,923	118.4	—92,427	—110,809	—14,535
Texas & New Orleans	4,421	8,713,214	819,338	9,532,552	1,572,531	2,014,372	366,448	3,849,829	8,468,156	81.5	1,922,327	321,151	1,990,059
Spokane, Portland & Seattle	947	590,444	34,706	625,150	92,471	90,645	9,631	241,593	464,025	69.3	205,581	88,787	209,625
Tennessee Central	287	175,031	3,416	178,447	260,568	250,831	28,750	735,612	1,363,037	74.0	479,398	170,298	348,782
Texas & Pacific	1,937	1,850,749	196,673	2,047,422	221,065	362,273	74,408	783,059	1,555,290	70.1	667,210	388,795	550,405
Texas Mexican	162	82,102	115	82,217	18,082	18,112	3,394	2,229,884	4,517,074	71.7	1,780,672	896,025	1,399,340
Toledo, Peoria & Western	239	167,314	.....	167,314	40,138	16,776	17,025	41,393	123,260	72.7	46,222	18,016	22,621
Union Pacific System	9,912	8,300,838	1,019,450	9,320,288	1,090,913	1,882,038	337,269	3,862,479	7,822,926	76.3	2,434,971	669,002	1,832,116
Utah	111	55,080	.....	55,080	9,779	20,841	1,337	117,747	137,966	91.8	4,529	—3,423	17,111
Virginian	619	1,502,358	2,919	1,505,277	155,054	372,074	23,448	265,898	840,210	53.8	720,360	559,806	868,335
Wabash	2,434	2,817,230	170,023	3,000,253	381,723	596,100	146,088	1,438,981	2,727,917	84.7	492,634	267,522	718,925
Ann Arbor	294	298,876	2,381	301,257	1,494,006	1,790,324	448,154	4,333,062	8,176,541	88.5	1,065,037	—652,478	1,714,652
Western Maryland	879	1,072,358	5,488	1,077,846	123,204	247,730	37,185	331,968	779,001	69.2	346,537	265,537	582,601
Western Pacific	1,208	2,512,741	17,161	2,529,902	348,285	793,754	116,472	1,008,842	2,404,380	70.9	988,528	776,371	1,507,948
Wheeling & Lake Erie	513	799,773	1,752	801,525	68,729	181,075	32,089	301,165	609,231	73.3	221,770	157,918	575,149
	513	2,092,820	5,409	2,098,229	216,036	540,995	99,199	892,812	1,828,021	83.8	354,352	225,565	1,353,210

Table of Freight Operating Statistics
appears on next left-hand page

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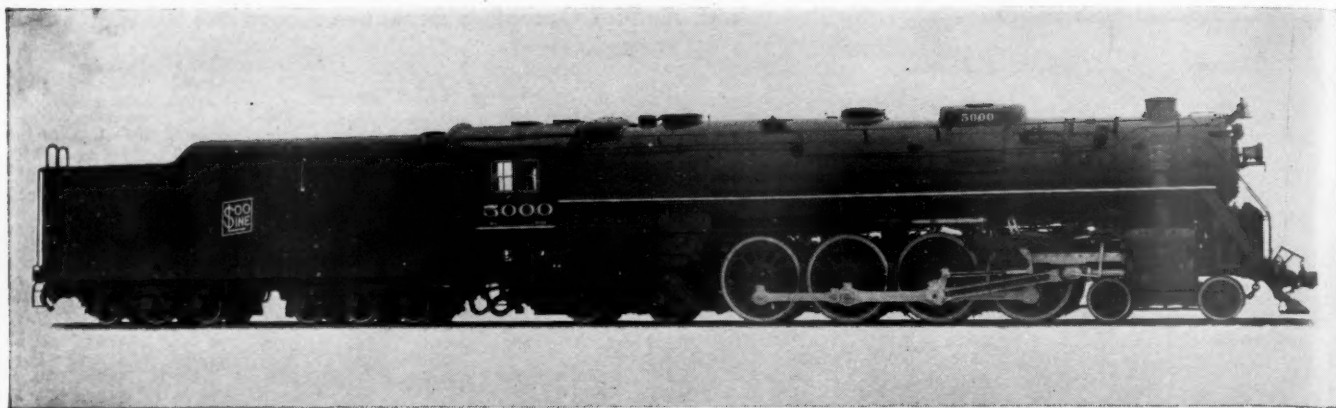
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Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of February.

Region, road, and year	Miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Number of road locomotives on line			
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, excluding locomotives and tenders	Net, revenue and non-revenue	Serviceable		Per cent un-serviceable	
									Not stored	Stored		
New England Region:												
Boston & Albany.....1938	374	104,615	108,274	7,559	2,263	65.5	126,962	43,079	48	5	37	41.1
1937	373	138,267	141,861	8,659	3,127	69.6	165,570	59,724	60	3	29	31.5
Boston & Maine.....1938	1,941	234,476	258,712	19,119	7,572	67.5	431,764	156,464	120	1	128	51.4
1937	1,941	264,912	297,643	24,085	9,422	71.7	511,497	195,443	139	..	136	49.5
N. Y., New H. & Hartf....1938	2,006	285,174	355,293	25,442	9,023	63.6	505,414	178,686	170	19	88	29.5
1937	2,010	322,237	402,533	23,030	11,455	69.5	605,134	229,626	189	7	82	29.6
Great Lakes Region:												
Delaware & Hudson.....1938	830	180,455	237,463	23,582	5,788	61.6	368,228	167,229	87	144	32	12.8
1937	830	213,762	292,834	33,791	7,784	67.8	478,951	235,556	105	127	33	17.3
Del., Lack. & Western....1938	983	292,552	326,041	43,492	9,278	66.0	548,487	210,962	124	9	84	38.7
1937	983	350,779	390,229	51,650	11,813	70.3	674,953	272,720	145	..	92	38.8
Erie (incl. Chi. & Erie)....1938	2,275	526,574	552,752	34,611	21,798	64.4	1,316,486	493,860	210	51	210	44.6
1937	2,284	653,321	696,759	37,531	29,117	70.5	1,686,058	703,694	228	28	215	45.6
Grand Trunk Western.....1938	1,027	201,138	202,802	2,244	5,144	60.6	320,617	112,648	75	4	42	34.7
1937	1,027	251,873	256,997	3,554	6,992	69.8	401,012	157,841	84	..	52	38.2
Lehigh Valley .....1938	1,289	270,064	295,380	38,127	10,070	64.0	632,113	257,227	123	3	129	50.6
1937	1,303	355,623	386,840	46,494	12,973	68.4	781,898	377,377	146	8	130	45.8
New York Central.....1938	10,653	2,198,428	2,319,803	129,712	68,171	57.8	4,655,792	1,851,883	788	309	382	25.8
1937	10,790	2,838,932	2,997,100	181,615	95,714	61.8	6,201,541	2,671,664	958	75	455	30.6
New York, Chi. & St. L....1938	1,672	424,759	427,090	5,460	14,420	61.0	891,365	319,329	145	28	25	12.6
1937	1,672	529,087	537,496	8,615	18,542	68.0	1,123,044	474,736	173	2	19	9.8
Pere Marquette .....1938	2,081	279,552	286,169	5,014	7,287	59.0	474,837	171,644	109	22	34	20.6
1937	2,081	354,252	369,914	5,846	9,258	65.1	582,617	238,943	118	3	31	20.4
Pitts. & Lake Erie.....1938	233	42,750	43,929	.....	1,637	55.9	138,566	72,357	18	22	31	43.7
1937	234	96,948	100,544	.....	3,743	59.5	316,470	175,432	34	4	26	40.6
Wabash .....1938	2,421	489,394	501,505	9,437	14,363	62.8	866,626	298,368	139	21	131	45.0
1937	2,434	602,800	618,057	13,043	18,340	67.9	1,058,326	398,823	151	28	121	40.3
Central Eastern Region:												
Baltimore & Ohio.....1938	6,326	1,129,673	1,377,268	142,156	32,351	59.8	2,222,570	950,987	572	157	545	42.8
1937	6,351	1,518,140	1,873,840	206,111	48,561	65.1	3,245,788	1,552,255	710	25	546	42.6
Central of New Jersey....1938	678	129,610	146,448	27,188	3,865	57.9	280,654	131,972	72	5	76	49.7
1937	681	145,221	162,690	32,172	4,677	62.5	315,630	151,366	57	15	74	50.3
Chicago & Eastern Ill.....1938	927	148,553	148,979	2,634	3,841	64.2	245,064	103,837	52	3	51	48.1
1937	931	180,601	181,309	2,872	5,048	66.6	322,604	145,140	58	..	43	42.6
Elgin, Joliet & Eastern....1938	435	77,544	78,589	1,221	1,660	56.9	129,258	59,493	49	3	31	37.3
1937	435	114,121	117,643	2,565	2,925	61.6	230,026	117,719	63	..	21	25.0
Long Island .....1938	390	24,895	25,042	12,913	219	50.7	17,079	6,571	34	7	7	14.6
1937	393	27,930	28,575	14,332	239	51.4	18,569	7,297	34	5	11	22.0
Pennsylvania System ....1938	10,023	2,154,538	2,472,132	264,317	75,517	60.5	5,072,540	2,129,837	1,124	515	697	29.8
1937	10,028	3,213,442	3,685,816	424,495	111,342	63.3	7,547,200	3,434,773	1,574	314	434	18.7
Reading .....1938	1,445	333,837	366,591	41,870	8,885	57.9	666,909	311,676	191	34	120	34.8
1937	1,445	436,950	478,199	56,110	12,542	63.4	914,307	457,062	203	35	80	25.2
Pocahontas Region:												
Chesapeake & Ohio.....1938	3,050	670,439	702,309	30,255	26,881	55.6	2,230,273	1,181,038	329	74	141	25.9
1937	3,050	867,689	937,923	45,737	38,503	56.6	3,285,006	1,805,166	417	16	112	20.6
Norfolk & Western.....1938	2,178	500,059	519,311	26,508	19,053	58.8	1,494,854	770,563	259	78	28	7.7
1937	2,183	710,396	774,999	43,570	28,902	59.5	2,442,924	1,319,412	278	58	25	6.9
Southern Region:												
Atlantic Coast Line.....1938	5,079	557,831	567,481	8,193	13,467	61.2	741,311	251,479	249	14	84	24.2
1937	5,116	656,745	658,506	9,613	14,826	60.8	816,791	270,399	253	15	91	25.3
Central of Georgia.....1938	1,886	214,977	215,780	2,970	4,663	68.9	263,938	98,839	98	..	23	19.0
1937	1,886	256,652	260,128	4,367	5,695	72.8	311,638	123,441	98	..	26	21.0
Illinois Central (incl. Y. & M. V.).....1938	6,541	1,205,489	1,213,418	23,251	31,004	59.8	2,064,538	835,924	640	32	190	22.0
1937	6,556	1,504,786	1,520,314	29,519	37,524	66.4	2,400,804	1,055,193	682	8	185	21.1
Louisville & Nashville....1938	4,929	905,370	961,057	24,059	19,785	58.0	1,383,335	619,257	325	60	176	31.4
1937	4,935	1,079,777	1,173,306	28,846	23,700	61.6	1,639,972	785,329	383	1	185	32.5
Seaboard Air Line.....1938	4,305	477,858	498,820	4,763	12,917	62.5	772,009	266,325	217	23	63	20.8
1937	4,295	544,432	563,163	3,097	14,071	65.1	824,563	296,480	250	1	61	19.6
Southern .....1938	6,570	1,110,524	1,127,378	16,740	24,299	63.3	1,454,208	563,362	499	2	239	32.3
1937	6,596	1,369,434	1,396,364	21,554	32,642	68.9	1,826,020	750,867	510	18	251	32.2
Northwestern Region:												
Chi. & North Western....1938	8,388	792,284	815,906	18,898	19,857	61.3	1,266,268	476,592	335	165	195	28.1
1937	8,402	927,430	967,046	26,423	23,105	62.2	1,467,562	547,585	421	18	269	38.0
Chicago Great Western....1938	1,450	224,259	225,313	7,302	5,877	59.2	370,621	129,779	62	..	28	31.1
1937	1,450	255,770	258,762	8,038	6,957	66.8	418,919	165,837	62	..	27	30.3
Chi., Milw., St. P. & Pac...1938	10,953	1,060,546	1,097,024	39,301	26,888	61.6	1,732,960	696,541	460	103	142	20.1
1937	11,107	1,315,369	1,429,706	66,952	34,184	63.4	2,187,834	914,062	450	109	115	17.1
Chi., St. P., Minneap. & Om.1938	1,636	191,819	198,956	9,411	4,046	63.1	257,598	106,030	110	14	18	12.7
1937	1,636	224,260	236,141	12,849	4,537	63.7	288,866	120,255	82	40	20	14.1
Great Northern .....1938	7,975	629,168	619,573	21,046	16,946	63.2	1,076,281	419,179	312	89	138	25.6
1937	7,997	729,490	735,430	29,844	20,357	63.3	1,303,521	534,537	339	65	162	28.6
Minneap., St. P. & S. St. M.1938	4,277	331,602	337,718	3,203	6,669	63.3	400,309	152,869	122	2	34	21.5
1937	4,278	372,612	381,584	5,658	7,870	67.7	449,379	186,629	127	..	24	15.9
Northern Pacific .....1938	6,423	535,226	557,473	27,109	15,835	70.8	935,596	400,356	343	54	62	13.5
1937	6,429	724,555	805,501	44,996	21,165	66.7	1,312,480	573,888	385	8	72	15.5
Central Western Region:												
Alton .....1938	912	186,546	193,385	1,467	3,624	57.2	242,115	84,579	66	..	34	34.0
1937	912	213,527	218,754	2,491	5,063	67.3	309,266	121,489	77	1	21	21.2
Atch., Top. & S. Fe (incl. G. C.1938	13,512	1,459,532	1,559,924	63,168	38,072	62.3	2,406,361	810,236	554	111	266	28.6
1937	13,362	1,725,540	1,883,178	83,324	47,154	64.4	2,878,170	1,016,254	569	63	330	34.3
Chi., Burl. & Quincy.....1938	8,928	1,006,748	1,028,122	33,092	27,416	61.2	1,647,071	670,237	410	66	89	15.8
1937	8,934	1,317,923	1,368,513									

1938, Compared with February, 1937, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road, and year	Number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, excluding locomotives and tenders		Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Loco-motive-miles per locomotive-day
	Home	Foreign	Total		Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile							
New England Region:													
Boston & Albany.....1938	1,426	3,953	5,379	2.3	20,634	1,230	417	19.0	262	21.0	4,114	167	48.5
1937	2,330	4,285	6,615	24.2	20,942	1,208	436	19.1	320	24.1	5,718	169	62.0
Boston & Maine.....1938	8,450	6,906	15,356	13.4	26,131	1,848	670	20.7	366	26.2	2,879	105	43.3
1937	7,303	9,121	16,424	13.3	26,578	1,940	741	20.7	434	29.2	3,596	108	46.7
N. Y., New H. & Hartf....1938	9,665	9,011	18,676	16.0	26,869	1,804	638	19.8	388	26.8	3,181	112	54.6
1937	9,244	13,367	22,611	14.5	27,251	1,908	724	20.0	371	26.6	4,080	111	61.8
Great Lakes Region:													
Delaware & Hudson.....1938	8,638	2,573	11,211	3.6	30,267	2,051	932	28.9	553	31.0	7,196	113	38.0
1937	7,550	3,645	11,195	5.4	31,576	2,254	1,108	30.3	730	35.5	10,133	114	47.3
Del., Lack. & Western....1938	13,996	4,147	18,143	15.9	32,895	1,902	732	22.7	413	27.5	7,665	149	65.8
1937	12,524	7,186	19,710	17.6	33,257	1,948	787	23.1	501	30.9	9,908	140	72.3
Erie (incl. Chi. & Erie)....1938	20,180	11,290	31,470	9.1	41,671	2,521	946	22.7	552	37.8	7,753	107	49.4
1937	18,462	18,022	36,484	4.1	42,814	2,599	1,085	24.2	713	41.8	11,003	105	61.5
Grand Trunk Western.....1938	5,623	4,620	10,243	16.5	31,757	1,600	562	21.9	387	29.1	3,917	106	66.4
1937	3,933	9,147	13,080	15.4	30,774	1,606	632	22.6	451	28.6	5,488	114	74.3
Lehigh Valley .....1938	11,844	7,847	19,691	10.1	43,498	2,364	962	25.5	452	27.7	7,127	122	49.4
1937	11,391	10,609	22,000	6.7	39,042	2,235	965	26.0	537	30.2	9,247	133	58.7
New York Central.....1938	100,069	51,695	151,764	16.4	36,285	2,135	849	27.2	424	27.0	6,208	112	66.0
1937	84,822	76,069	160,891	15.0	35,454	2,207	954	27.9	597	34.6	8,843	115	84.6
New York, Chi. & St. L....1938	8,492	6,178	14,670	4.1	39,752	2,101	753	22.1	764	56.6	6,821	94	84.4
1937	5,016	10,439	15,455	3.2	37,041	2,134	902	25.6	1,161	66.7	10,140	99	107.3
Pere Marquette .....1938	11,007	5,692	16,699	4.7	28,117	1,700	615	23.6	369	26.6	2,946	101	69.3
1937	6,144	8,339	14,483	3.4	27,461	1,648	676	25.8	605	36.0	4,101	103	95.7
Pitts. & Lake Erie.....1938	7,497	8,621	16,118	35.3	42,860	3,241	1,693	44.2	153	6.2	11,091	100	24.2
1937	9,712	11,720	21,432	39.1	41,586	3,281	1,819	46.9	285	10.2	26,775	96	62.1
Wabash .....1938	13,855	7,385	21,240	6.2	37,324	1,796	618	20.8	494	37.9	4,401	123	66.5
1937	8,890	11,263	20,153	6.4	36,305	1,775	669	21.7	703	47.6	5,852	124	77.8
Central Eastern Region:													
Baltimore & Ohio.....1938	65,909	17,054	82,963	15.8	27,066	1,992	852	29.4	408	23.2	5,369	155	45.9
1937	56,858	33,854	90,712	15.6	26,276	2,182	1,044	32.0	608	29.2	8,729	156	61.9
Central of New Jersey.....1938	10,771	8,659	19,430	31.4	28,158	2,276	1,069	34.1	238	12.1	6,942	146	51.8
1937	10,146	9,918	20,064	32.1	27,032	2,260	1,084	32.4	270	13.4	7,936	143	62.2
Chicago & Eastern Ill.....1938	3,311	2,730	6,041	2.6	30,484	1,658	702	27.0	631	36.4	4,000	133	53.5
1937	2,368	4,665	7,033	2.5	29,733	1,803	811	28.8	729	38.1	5,568	128	68.4
Elgin, Joliet & Eastern....1938	8,710	2,431	11,141	7.6	15,897	1,711	787	35.8	189	9.3	4,884	136	48.4
1937	7,731	7,430	15,161	4.6	16,254	2,090	1,070	40.2	289	11.7	9,670	129	77.6
Long Island .....1938	375	2,737	3,112	3.9	5,393	698	269	30.0	74	4.9	602	334	39.5
1937	383	2,929	3,312	2.3	5,162	678	266	30.5	80	5.1	664	361	43.9
Pennsylvania System .....1938	205,734	43,719	249,453	16.5	35,816	2,389	1,003	28.2	304	17.8	7,589	128	47.1
1937	181,857	73,158	255,015	16.9	33,755	2,395	1,090	30.8	484	24.8	12,233	128	70.1
Reading .....1938	26,942	8,683	35,625	14.5	26,013	2,001	935	35.1	312	15.3	7,703	143	46.7
1937	22,704	15,212	37,916	5.7	27,114	2,097	1,048	36.4	436	18.9	11,300	144	62.9
Pocahontas Region:													
Chesapeake & Ohio.....1938	50,016	6,885	56,901	2.3	50,066	3,352	1,775	43.9	752	30.8	13,829	88	53.0
1937	37,904	12,896	50,800	1.2	49,466	3,899	2,143	46.9	1,197	45.1	21,138	84	70.1
Norfolk & Western.....1938	43,175	4,039	47,214	1.2	46,795	3,025	1,559	40.4	588	24.7	12,635	109	58.5
1937	28,863	6,684	35,547	1.9	49,845	3,492	1,886	45.7	1,182	43.5	21,588	105	87.1
Southern Region:													
Atlantic Coast Line.....1938	18,534	7,447	25,981	18.3	22,952	1,331	451	18.7	343	30.0	1,768	113	63.1
1937	16,794	11,824	28,618	20.5	21,597	1,245	412	18.2	340	30.6	1,888	116	70.3
Central of Georgia.....1938	5,483	2,687	8,170	1.7	23,148	1,234	462	21.2	451	30.9	1,872	123	70.6
1937	2,746	5,595	8,341	2.2	22,316	1,220	483	21.7	545	34.5	2,338	132	84.1
Illinois Central (incl. Y. & M. V.).....1938	35,624	14,364	49,988	14.4	28,369	1,720	697	27.0	596	36.9	4,564	141	55.1
1937	28,975	27,033	56,008	19.8	24,121	1,623	713	28.1	666	35.7	5,748	145	67.5
Louisville & Nashville.....1938	42,988	7,967	50,955	11.8	23,988	1,530	685	31.3	445	24.5	4,487	138	65.9
1937	31,691	14,356	46,047	15.3	21,495	1,523	729	33.1	627	30.7	5,684	141	80.5
Seaboard Air Line.....1938	12,188	5,140	17,328	2.0	27,063	1,638	565	20.6	550	42.7	2,209	117	65.3
1937	8,942	9,944	18,886	1.7	25,035	1,538	553	21.1	567	41.4	2,465	126	71.4
Southern .....1938	20,929	16,716	37,645	10.0	22,906	1,317	510	23.2	530	36.1	3,062	149	58.1
1937	20,572	23,103	43,675	13.8	21,525	1,351	556	23.0	612	38.6	4,066	151	67.5
Northwestern Region:													
Chi. & North Western.....1938	40,541	15,603	56,144	8.5	25,529	1,657	624	24.0	298	20.2	2,029	129	47.3
1937	33,372	21,959	55,331	6.2	24,027	1,629	608	23.7	353	24.0	2,328	143	55.1
Chicago Great Western.....1938	2,814	2,809	5,623	3.3	29,662	1,656	580	22.1	834	63.8	3,197	144	96.5
1937	1,785	5,305	7,090	2.9	26,625	1,640	649	23.8	848	53.3	4,084	162	114.8
Chi., Milw., St. P. & Pac.....1938	47,944	14,540	62,484	2.9	27,021	1,642	660	25.9	396	24.8	2,271	134	63.4
1937	39,767	22,521	62,288	2.9	25,650	1,672	699	26.7	521	30.7	2,939	148	85.9
Chi., St. P., Minneap. & Om.....1938	4,420	4,157	8,577	9.3	18,141	1,352	557	26.2	420	25.4	2,315	130	56.6
1937	4,040	4,677	8,717	9.6	16,503	1,304	543	26.5	457	27.0	2,625	139	67.9
Great Northern .....1938	39,178	8,697	47,875	7.2	26,041	1,716	668	24.7	314	20.1	1,877	145	46.7
1937	35,309	11,862	47,171	8.9	26,141	1,799	738	26.3	407	24.5	2,387	149	53.1
Minneap., St. P. & S. St. M.....1938	13,242	3,106	16,348	6.7	19,540	1,211	463	22.9	334	23.0	1,277	120	82.5
1937	11,299	5,798	17,097	4.3	18,017	1,218	506	23.7	391	24.3	1,558	129	93.2
Northern Pacific .....1938	32,248	3,958	36,206	8.8	27,950	1,754	751	25.3	394	22.0	2,226	155	49.6
1937	25,435	7,761	33,196	8.8	27,304	1,821	796	27.1	615	34.0	3,188	169	71.2
Central Western Region:													
Alton .....1938	2,686	5,818	8,504	13.6	31,237	1,304	456	23.3	348	26.1	3,312	139	73.6
1937	2,330	5,888	8,218	26.2	32,571	1,454	571	24.0	532	32.9	4,758	135	83.6
Atch., Top. & S. Fe (incl. G. C.).....1938	76,813	10,967	87,780	8.4	31,881	1,651	556	21.3	330	24.9	2,142	127	66.2
1937	61,333	14,815	76,148	8.8	31,863	1,672	590	21.6	470	33.8	2,716	135	77.1
Chi., Burl. & Quincy.....1938	30,270	12,727	42,997	7.0	29,468	1,641							



THE SOO LINE

4-8-4 type

Heavy Freight Power

Four 4-8-4 type locomotives have recently been delivered to the Soo Line by Lima Locomotive Works, Incorporated. This power is designed to meet the requirements of high capacity, high speed freight service. » » » The locomotives have 75-inch drivers, and a total weight of 763,100 pounds (engine and tender loaded). Boiler pressure is 270 pounds and the starting tractive effort is 66,000 pounds. The grate has an area of 88.3 square feet and the 86-inch diameter boiler has a combined heating surface of 7,260 square feet including the superheater. » » » The locomotives are fired by Standard Stokers.

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